THE MAGAZINE OF BETTER SCHOOL ADMINISTRATION

THE Nation's Schools

FEBRUARY

Good Pay Must Precede Merit Rating

N.D.E.A. Is an Unwise Compromise

Administrators Divided on School Liability

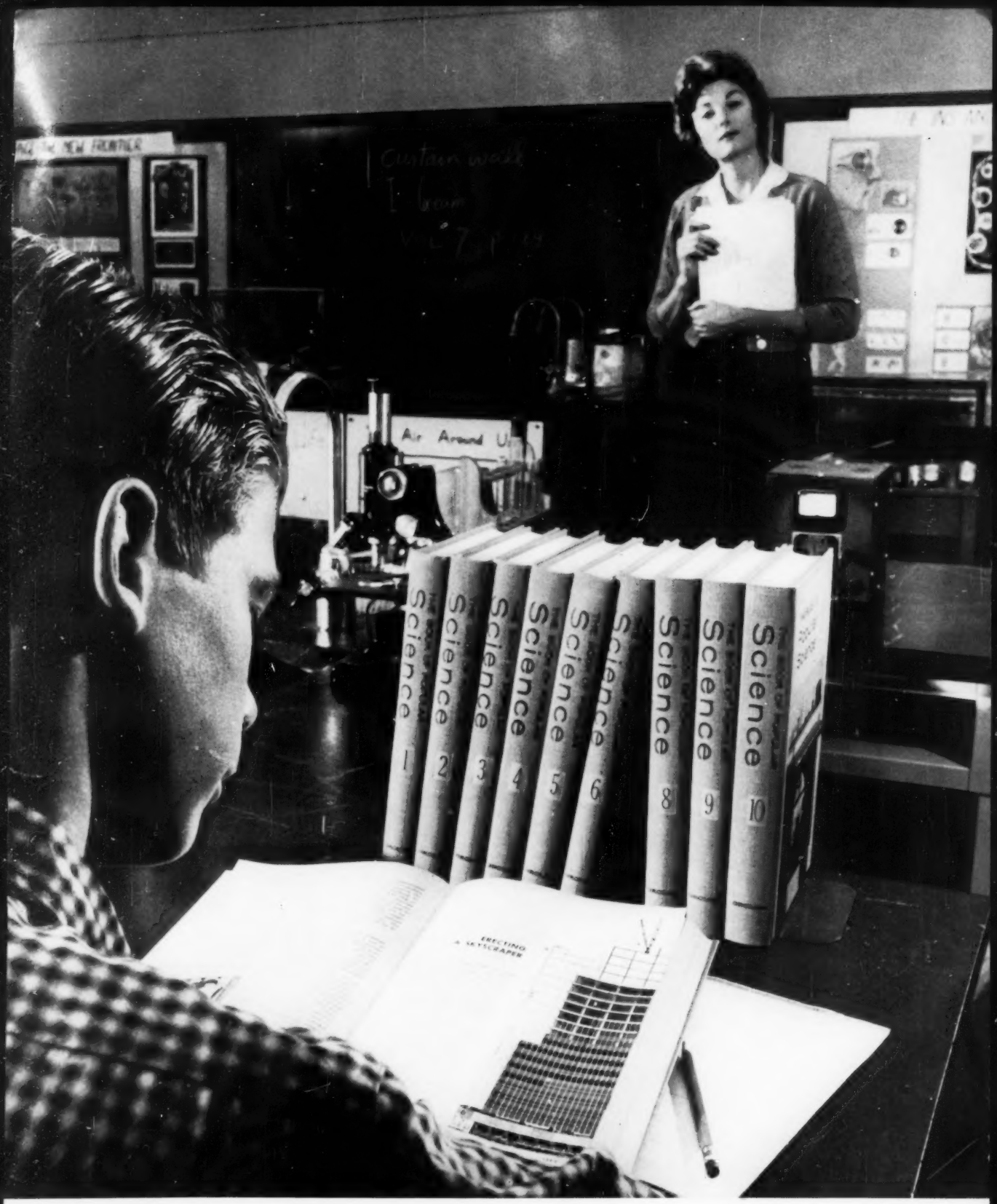
Rochester Story: It Could Happen Anywhere!

COMPLETE CONTENTS ON PAGES 3 AND 4

Forty-eight pages on

AUDIO—VISUAL Tools of Learning

Administration Study No. 8—begins on page 63



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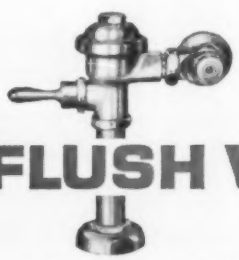

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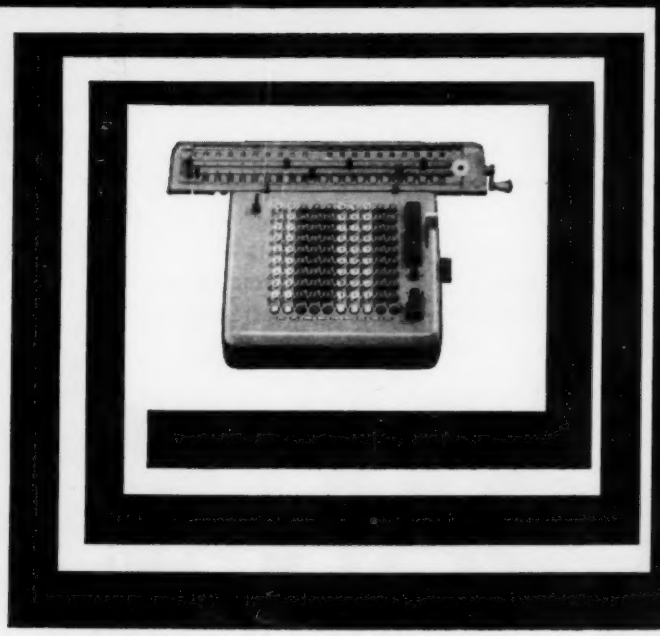

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FEBRUARY 1961

Audio-Visual Tools of Learning 63

Administration Study No. 8: A 48 page study for the administrator on facilities, technics, policies and research related to audio-visual media.

A Picture of Where We Stand 64 Walter A. Wittich

A stop-action picture of where we are in the second year of N.D.E.A. introduces this TNS administration study.

About the A-V Tools 65 Don White

The "cross-media approach" improves instruction by use of audio-visual devices. Here's how these aids are being developed and perfected by the industry.

Teaching Films 68

Teaching films have become an essential part of the school program. The trend is toward courses and "packages" as distinguished from individual films.

Teaching Machines 70 Robert C. Snider

Auto-instruction devices enable individual students to learn a "program" at their own pace, and the teacher is freed from drudgery.

Programed Instructional Materials 74 P. Kenneth Komoski

"Psychological sequencing" is the essence of programing. Independent learning through self-instruction is the net result.

The Roanoke Experiment 76 E. W. Rushton

Using programed materials, eighth grade pupils are learning algebra at a greatly accelerated pace, holding promise for other subjects on all levels.

Television in the Classroom 80

Eighteen administrators with ETV experience hold that television is effective in teaching, as witnessed by such factors as motivation and subject understanding.

Language Laboratories 83 Elton Hocking

Experience with language labs has established the need for good supervision and sustained enthusiasm. Here's how to plan, what to expect.

Local Production 87 Ernest Tiemann

Classroom learning can be more effective if teachers are provided with the time and facilities to prepare their own instructional materials.

Administration 90 Anna L. Hyer

It's the staff that sets the example! Here are questions of leadership, budget and coordination for the administrator to ask himself.

Edison Pioneered Audio-Visual Learning 92 Otis A. Crosby

Here is a pictorial account of the inventions that laid the groundwork for most of today's A-V aids, and a profile of the genius behind them.

Schoolhouse Planning 97 Charles F. Schuller

The newer media can be most effective in a carefully planned environment. The architect should have detailed specifications.

Research 100 C. Walter Stone

Under N.D.E.A., $8 million has been obligated, to date, for research into uses of A-V media. Here's a progress report and highlights of several projects under way.

Vol. 67 No. 2

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Continued on next page

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THE Nation's Schools

Contents Continued From Page 3

SCHOOL LUNCH

Use AV Media To Teach Nutrition 109 Faith Chalmers

Audio-visual communication, through such media as field trips, exhibits, and ETV, is a teaching factor in the school lunch program.

OPINION POLL

Administrators Disagree on Liability 112

Respondents say school districts should not be held liable for property damage. Neither should they be required to carry insurance covering such liabilities.

Good Pay Should Precede Merit Rating 114 C. Grieder

Participants in this fourth roundtable hold that there must be a higher salary structure for teachers on a national level before the merit plan can be successful.

Growth Through the War Years 119

Part 2 of this series tells how the Associated Exhibitors of the N.E.A. achieved status and growth during and after the war years.

When the Architect Can Recover 122 L. O. Garber and M. J. Tyree

Part 3 of a series: Cases are cited on the recovery rights of an architect in the absence of contract, under illegal contract, quantum meruit, or abandoned contract.

OTHER FEATURES

On the Shelf 22
Looking Forward: Editorials 61
Chalk Dust 124
Report From Washington 126
News in Review 142
About People 163
Book Shelf 170
Coming Events 182
What's New for Schools 191
Index to Advertisers 241

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Cats Get By With It. It's all right if Tweets, the cat on the pedestrian safety posters in New York City, says: "That light's gonna change," because she attracts attention and thus may save lives, argued Warren Moscow, executive assistant to the mayor. He made this comment after receiving a letter that questioned using the ungrammatical example particularly after Mayor Wagner's proclaiming a 'Learn English Week.' The critic wrote: "I might ask whether our children are to imitate their instructors, whose spoken word fast fades into nothingness, or the printed word that is replayed at every street corner?" This is the second time city hall has had to defend the printed warnings. Objections came earlier this year to the traffic department's poster saying: "I've got nine lives. Do you?"

Self-Denial. If the official decision to lower the voting age to 18 were to be left up to some 11,200 junior and senior high school students across the nation, 62.1 per cent of them would oppose the action. This reverses the Institute of Student Opinion poll taken six years ago. At that time 64.9 per cent favored lowering the voting age to age 18 years.

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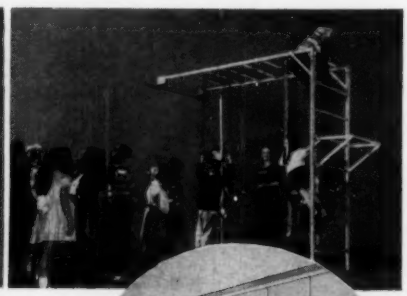

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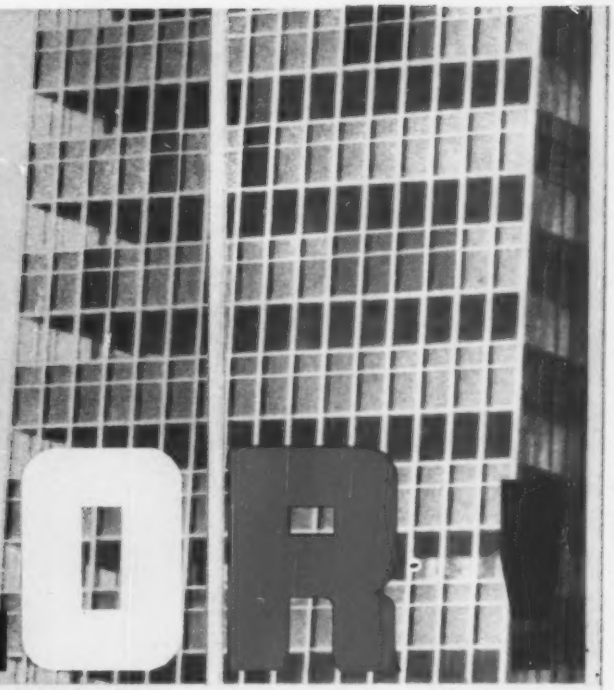

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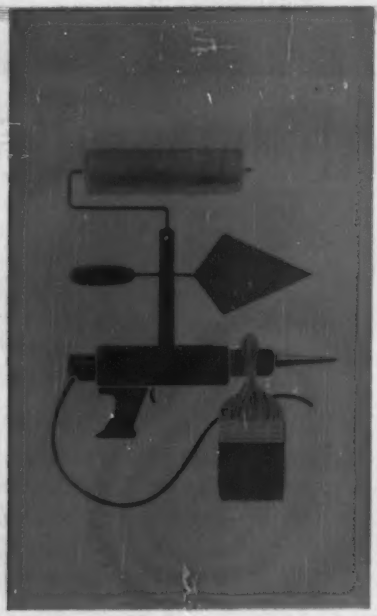

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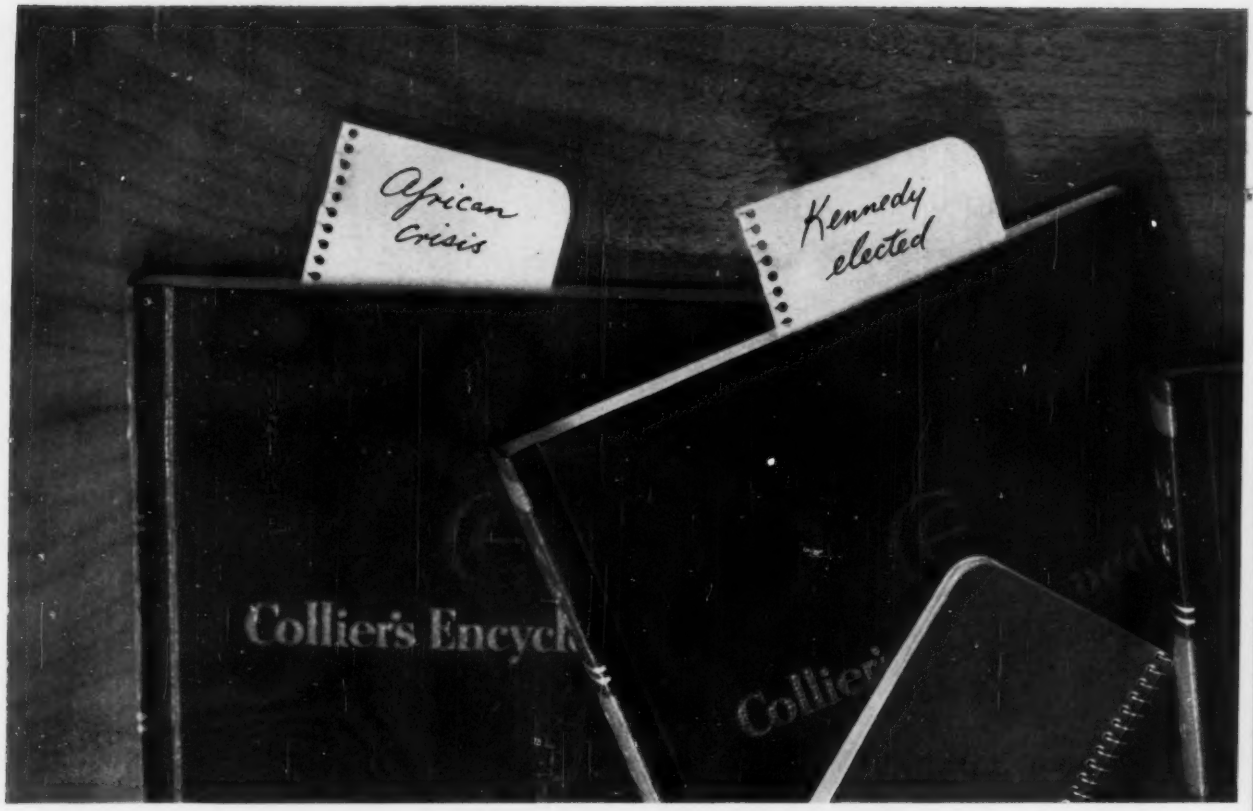

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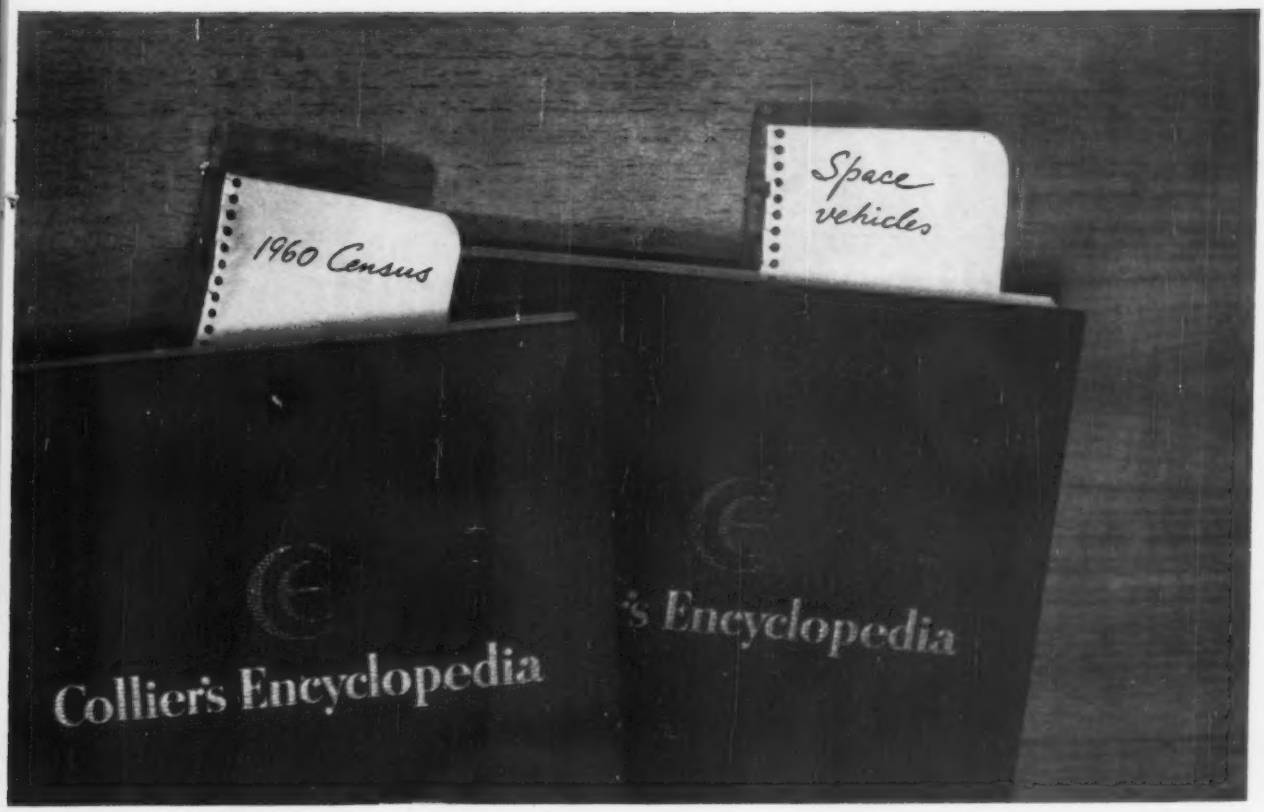

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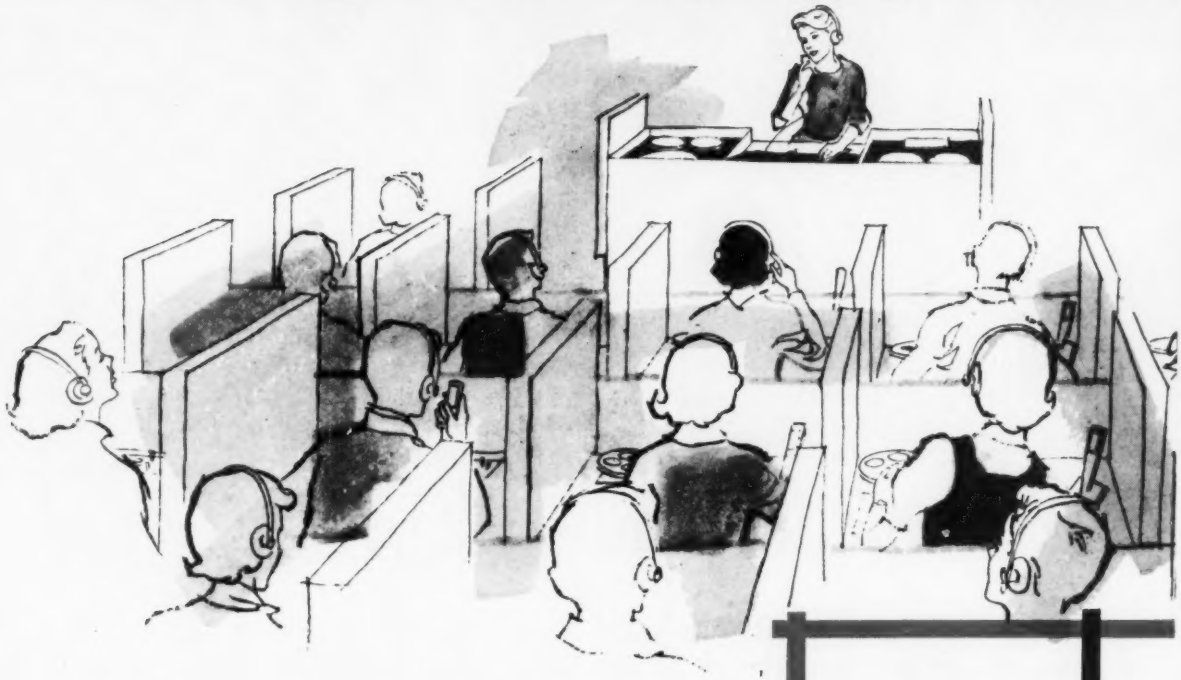

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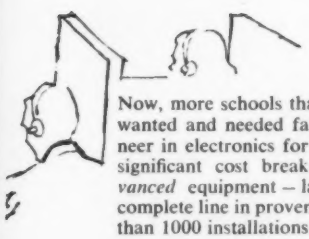

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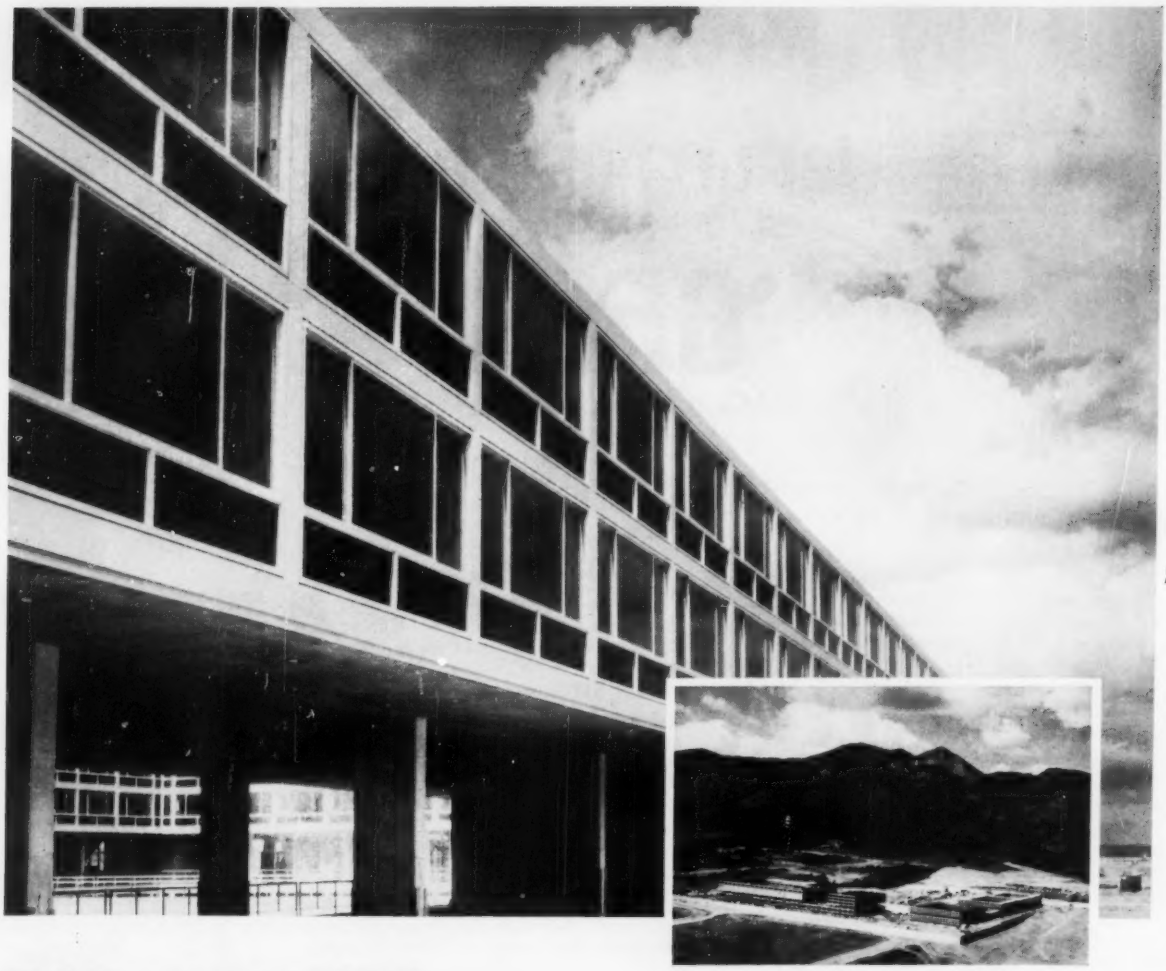

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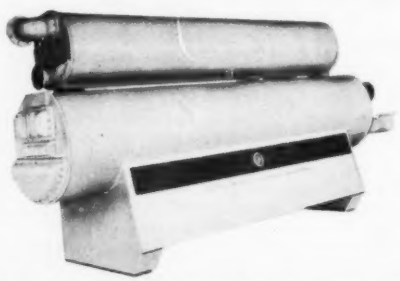

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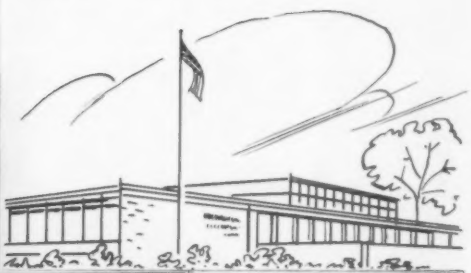
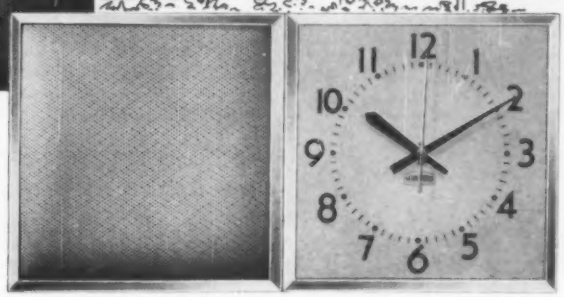


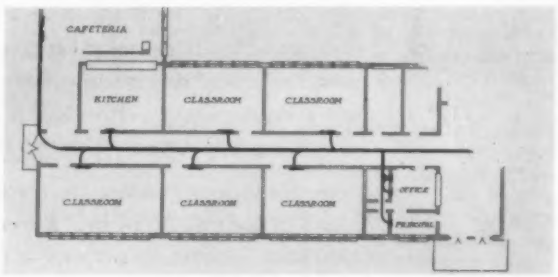


No complicated, difficult-to-use central control console with Practi-Call. Bell control board of the clock and program system, with microphone and telephone sections added, is utilized for central control of both the speaker and telephone portions of the Practi-Call system.

Practical on ALL counts...including ECONOMY

Every school communication need—from general announcements to private telephone conversations—is provided for by Practi-Call . . . at a fraction of the cost of other sound systems.

Installation savings are substantial—with no sacrifice in quality of telephone or sound reproduction—because of single conduit system for all signalling and communication lines.



Request Publication No. 248

STANDARD Time

THE STANDARD ELECTRIC TIME COMPANY

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Close correlation of film content with curriculum impresses classroom teachers

What do film users mean when they call Coronet a "research-oriented" producer? . . . Simply that film production is geared to the question of how a film fits into the classroom . . . and that the producer systematically covers the major teaching objectives.

Coronet determines which films to make—and the teaching points to present—through a continuing review of textbooks, current teaching methods, and the latest educational research.

Coronet believes this method approaches classroom requirements more closely than any other. When teachers select films, asking, "How will this film improve instruction? . . . How does it fit the curriculum?", they answer by the preference they show for Coronet films.

Evidence of how Coronet films relate specifically to classroom needs may be found in the new brochure, "Films to Help Teach High School Biology." It correlates 51 films, by chapter, to each of the eleven most widely used textbooks in biology.

To request your free copy, simply write to:

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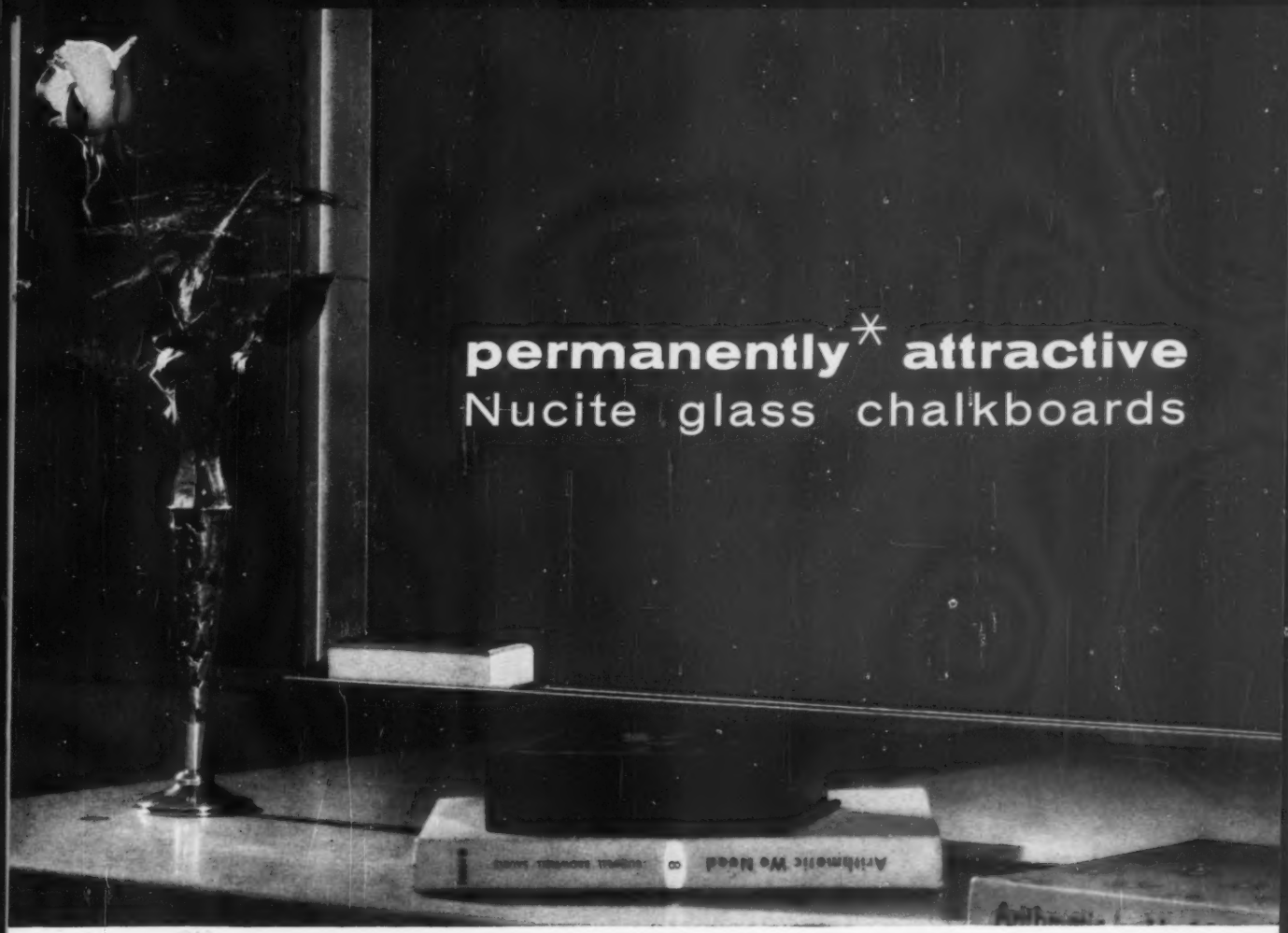


Durability plus design simplicity ensure an ageless beauty

Go out and check a brand-new Nucite chalkboard installation. You'll see a writing surface that's unusually smooth in texture . . . exceptionally even in color. Unlike boards that start out with a mottled appearance and grow progressively worse, Nucite boards always provide optimum contrast with chalk. Each attractive color—black, green, blue, cocoa or gray—is specially engineered for highest legibility with least eyestrain. You'll find they blend well with classroom decor, too.

Now examine the frame. It's a classically smooth, simple aluminum extrusion, unmarred by visible fastenings, perfectly mitered at corners. The chalk trays and accessories are handsomely solid. In other rooms, natural finished oak may have been selected for its traditional warmth. Either framing is timelessly attractive.

Check the same installation 25 years from now. You'll find no sign of wear, no fading, no chipping, no warping, no corrosion. One good washing, and the Nucite chalkboard will look exactly as it does today—and you can wash it daily, if desired.

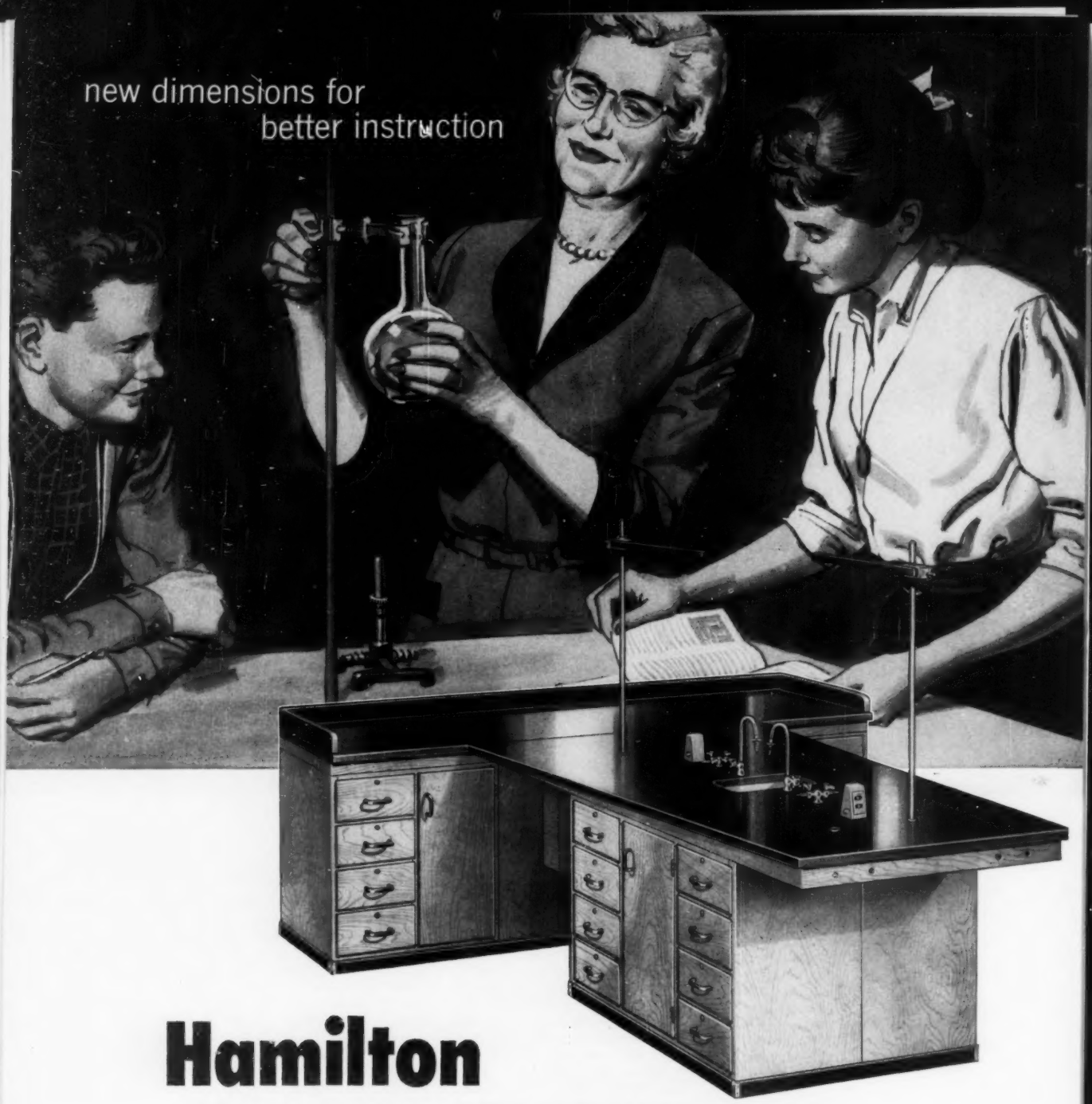
This durability means that a Nucite chalkboard is always the easiest to write on . . . always the easiest to read . . . always a handsome focal point in the schoolroom. It's the finest chalkboard available. Yet, cost is less than that of high-grade, heavy-gauge steel chalkboards.

See the photographs in Sweet's $\frac{23e}{Ne}$ . . . send for a sample . . . or best of all, go out and examine an installation; preferably one that's 20 years old. *Agents and distributors in all principal cities.* Write for the name of the one nearest you.

Sliding chalkboard panels expand the work area without taking up extra wall space. Operating either vertically or horizontally, they glide smoothly and silently on nylon rollers in chrome-plated tracks. Fixed back panels provide additional chalkboard surface or cork bulletin board area, or a combination projection screen/crayon board for multicolor work. Ask the New York Silicate distributor about our engineering service—and ask him for details on Nucite glass, steel, Formica, Silicate composition, or slate chalkboards, or about glass door and changeable letter bulletin boards—all made by New York Silicate.

* **In more than 20 years and 25,000 installations, we have never been called upon to fulfill the following guarantee: the surface of Nucite glass chalkboards is guaranteed for the life of the building against fading, warpage, or becoming slick or shiny under normal classroom use.** • Should any Nucite glass chalkboard break within 20 years after installation, outside of willful or accidental damage, it will be replaced free of charge.

NEW YORK SILICATE
BOOK SLATE COMPANY, INC.
600 Old Country Road
Garden City, New York



Hamilton

activity-centered student tables

Your science laboratory equipment is "permanent" — but must *grow* with your teaching program. It must fit — *functionally* — your teaching methods and procedures, and be able to absorb increased enrollment loads, by virtue of its arrangement potential and planning.

Possibly no unit of school furniture is subjected to as much rigorous wear as laboratory furniture, so it must be *structurally* sound.

Hamilton units are built for school use. They're constructed of selected northern hardwoods, with extra-heavy mortise and tenon-type joints — delivering the most and best of what it takes to stand up in use.

And *all* construction, of *all* units — must be of *consistent* quality.

Hamilton gives you expert help in selecting from an infinite variety of laboratory arrangements, through the Hamilton unit system.

Plan with Hamilton — and your laboratory facilities will be more practical, deliver more value for the greatest number of years.

Hamilton
PROFESSIONAL AND SCIENTIFIC FURNITURE

new dimensions in time and space efficiency for: physicians; dentists; industrial, hospital, school laboratories; draftsmen; printers; libraries; home laundries.

Hamilton Manufacturing Company, Two Rivers, Wisconsin

In this modern System, Student Position has only one switch. Equipment is housed in Remote Cabinet in rear of room.

A Language Laboratory System that's as advanced as this modern building!

The brand new High School at Wayland, Massachusetts, recently completed and now in operation, is as modern in its structure, internal arrangement, and instructional facilities as its advanced pedagogic aims.

These objectives are implemented by the modern concept of "teaching teams", supported by the latest and most effective teaching tools, such as the LinguaTRAINER Electronic Language Laboratory System.

Installed in the Wayland High Languages Center, the LinguaTRAINER fulfills the requirements of the instructional concept of "planned variability" because its versatility makes it adaptable to any shift in educational programming. LinguaTRAINER can accommodate any size class from individual students or small classes to seminar groups or large conference meetings.

LinguaTRAINER's outstanding flexibility allows instructors the widest possible freedom in programming and teaching courses, thus permitting the fostering of creativity and independent study among students. With LinguaTRAINER, a wide variety of subjects can be taught simultaneously to any sized unit of students.

Outstanding among LinguaTRAINER's features is the absence of distracting mechanical controls at the student's position; there's simply one switch here nothing else.

The Instructor's mechanical duties are minimum, and are centralized at the Teacher's Console. Individual Tape Recorders and all electronics are housed in a Remote Control Cabinet.

LinguaTRAINER is the first remote control language laboratory system used extensively in schools and colleges. Over two years' successful classroom operation attest to the superior quality and excellent workmanship of all components.

Write for informative LinguaTRAINER Brochure

SCIENCE ELECTRONICS, INC.

197 Massachusetts Avenue, Cambridge, Massachusetts

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GENERAL ELECTRONIC LABORATORIES, INC.

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ELECTRONIC LANGUAGE LABORATORY SYSTEM

REMOTE CABINET

TEACHER'S CONSOLE

PLUG-IN AMPLIFIER

TAPE CARTRIDGE

STUDENT HEADSET

For additional information, use postcard facing back cover.

PLANNED CREATIVITY

The imagination of a gifted child captures a clown in clay . . . and every skill of the teaching art shares the classroom. All the new methods and new tools of a dedicated profession create an environment to encourage and direct his energies. Part of that environment should be classroom furniture that reflects **planned** creativity in its scientific design and manufacture. With this in mind, we recommend that you specify the Virco #751 Lift-Lid Desk (shown below), the #752 Open Front Desk and the #260 Chair. Our new full-color catalog provides specifications on Virco's complete line of school furniture for kindergarten through college. Write today to: Virco Mfg. Corporation, Department A-2, Post Office Box 44846, Station H, Los Angeles, California. (Plants also in Arkansas and Pennsylvania.)

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NATIONAL ADDING AND ACCOUNTING MACHINES eliminate losses due to mental computations.

THIS NATIONAL SYSTEM paid for itself in less than sixteen months!

FRANK VAN IDERSTYNE, TREASURER of John W. Rouse Construction Corp.

"Our *National* Accounting System saves us $5,250 a year... returns 78% annually on investment!"

—John W. Rouse Construction Corp., Gouverneur, N.Y.

"Efficient record keeping is very important in our highly-competitive business. It must be thorough, accurate, and up-to-date. For this reason, we installed a modern National Accounting System and the installation has proved most effective.

"For example, our National System is more flexible—handles a greater variety of accounting jobs. We use it for Accounts Payable, Job Cost, Labor Distribution, Payroll, Federal and State Reports, including W-2 Forms. In all cases, our National System is faster and more accurate than our previous method. We can now keep a much closer check on costs and inventories.

"Most important of all, our National Accounting System saves us $5,250 each year, which means it returns 78% annually on investment!"

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RCA PRESENTS
THE "PRECEPTOR" SYSTEM

... world's most advanced language laboratory equipment!

This is the RCA "Preceptor"—an exciting new concept in language laboratories. Most advanced because it opens fresh new avenues for creative teaching . . . most advanced because it gives the teacher full control of the laboratory. Most advanced, too, because it's *transistorized* and because its *modular design* simplifies installation and makes expansion easy.

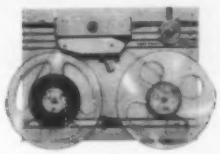
Transistors add many extra advantages to RCA's new "Preceptor" System—providing instant action, longer life, simpler wiring, and lower operating costs. These are but a few of the superior features RCA sound engineers have designed into the "Preceptor" to make it the world's most advanced and most wanted language laboratory system.

Write for complete information package explaining how RCA "Preceptor" System can vitalize your language curriculum. Also, ask for the name of your nearest RCA Language Laboratory Dealer. Address: Radio Corporation of America, Language Laboratory Sales, Building 15-1, Camden 2, N.J.

The RCA "Preceptor" console (above) with its master control panel puts the teacher in complete command. It allows: 1) monitoring of any student; 2) listening in on master tape and student's voice; 3) two-way conversation with any student; 4) recording of student on central tape recorder; 5) insertion of comments on the recording; 6) communication with whole class through "all-call" control. The teacher controls tape selection and can play up to 10 different tapes.

Sturdy RCA "Preceptor" booths can be installed singly, with or without flip-top desk to serve as writing surface, or in modules of two or three attractive economy booths.

World's Most Advanced Components . . . from RCA!



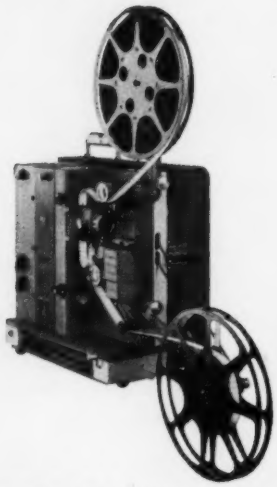
Expansion? Just add a pre-wired SelectorCom panel with a bank of 10 selector switches.

RCA tape decks for the "Preceptor" System may be either half-track, or dual-track. Single-knob control makes them ideally simple to operate at the console or in student booths, as a program source or for student recording. Convenient new cartridge type tape decks are also available.

RCA Tmk(s) ®

RADIO CORPORATION of AMERICA
CAMDEN 2, NEW JERSEY

Good reasons for RCA projector popularity!



- "Life-Tested*"—your assurance of projector quality!
- Easiest, fastest threading in the 16mm field!
- Whisper-quiet operation!
- Powerful 1200-watt lamp—throws 20% more light on screen!
- Built-in lubrication!
- Pressure guides are the "softest touch" in film handling!
- Nylon film pressure shoe—lasts 2 to 3 times longer!
- Superior sound reproduction!
- Longer operating life; minimum maintenance!

*Rigid endurance standards have been set for RCA "LIFE-TESTED" Projectors. Individual components as well as finished projectors are subjected to continuous testing to evaluate the durability and efficiency of all operating parts. "LIFE-TESTED" at RCA means better, more reliable performance from RCA Projectors.

RCA Tmk(s)®

RADIO CORPORATION of AMERICA

AUDIO-VISUAL PRODUCTS • CAMDEN 2, N.J.

ON THE SHELF

with James M. Spinning

Dismissal of Superintendent in Rochester, N. Y., Involves Politically Chosen School Board

EDITOR'S NOTE: In a school system with a long history of conspicuous achievement, in a city that in half a century has had only two changes in superintendency, how can the situation be reversed so rapidly that a superintendent of national stature is suddenly released and the whole town thrown into an uproar? Since this happened in Jim Spinning's own home town, Rochester, N. Y., and to his "own boy," we asked Jim to report the story. He replied: "Perhaps I am too close to the struggle and too emotionally involved to appraise attitudes and events objectively or to draw final conclusions. But it could happen in any town, and the Rochester story may be a warning for other communities." Here is Jim's blow-by-blow report:

At noon on December 1, just one month before the close of Howard C. Seymour's six-year term as superintendent of schools, the board of education in Rochester, N.Y., notified him that he would not be reappointed. At 4 p.m. the same day, the president of the board announced that decision at a regular public meeting. REASON ASSIGNED: *lack of confidence.*

On the preceding day the newspapers had carried a statement signed by 49 community leaders expressing the highest confidence in the superintendent and the hope that he would be continued in office. They had been alarmed by several weeks of press speculation and what one reporter described as the "elaborate silence" of four of the five board members to reveal their intentions.

The signers of the statement included the presidents of the leading industries, banks, department stores, and civic enterprises — men and women of both political parties. Had there been time the list would have been much longer.

Those attending the board meeting were stunned. The principal of the school in which it was held rose to ask the board to reconsider its decision. So did several teachers and parents. The president thanked them for stating their views, and that was that! The superintendent himself, with great self-control, quietly asked that all members of the staff close ranks and unite under new leadership.

Community expresses indignation. When the news hit the town there were cries of "shocking," "tragic," "incredible," "ridiculous." High indignation was voiced in lead editorials in both papers, in letters to the editor, in statements and resolutions, in demands for reversal of action and for appeal to the state commissioner of education, in proposals for bipartisan or nonpartisan election of the school board, and in the formation of *ad hoc* committees.

The press, radio and television coverage was unprecedented. The trustees of the chamber of commerce for the first time in history went on record on behalf of a public official. At its next meeting the Rotary Club, with some 300 persons in attendance, gave the superintendent a standing ovation.

Opposed by Federation. Every organized group in the school system (the Rochester Teachers Association, the central office staff, administrators and supervisors, high school principals, elementary principals, building and clerical staffs, and the retired teachers association) ranged itself in formal action alongside the superintendent — all, that is, except the Rochester Federation of Classroom Teachers.

Voices speaking regret and dismay were heard from the Commission of the Rochester Museum of Arts and Sciences, on which Dr. Seymour serves, and from the New York State Council of City and Village Superintendents, of which he had just been president. Shirley Cooper, A.A.S.A. associate secretary, was quoted as deploring the action as the kind in which every part of a school system is shaken, and the entire profession of school administration and the concept and function of local school boards are weakened.

He was "my boy." Before I go on with the story, I must emphasize to you

(*Continued on Page* 48)

. . . easier, quieter, safer!

Take the outstanding performer in 16mm projectors. Add an easy, smooth, quiet reverse action—that's the new RCA "Life-Tested"* Projector.

RCA reverse is quick as a flick of the wrist, because RCA's forward and reverse operate from a *single* rotary switch. You hear no irritating garbled noise during reverse operation, because RCA reverse *automatically* shuts off the sound. And, unlike other projectors—RCA uses a *separate* motor and blower for reverse. This means the projector lamp is cooled more efficiently . . . films get better protection. Your valuable film libraries get gentler treatment, last longer for greater economy!

Add up all the reasons and you'll see why RCA is the finest projector!

Your RCA Audio-Visual dealer has all the facts on reverse, plus many other good reasons for choosing RCA "Life-Tested"* Projectors. See him, too, for a variety of other audio-visual aids for easier teaching and faster learning. Look in the Classified Directory under "Motion Picture Equipment and Supplies" . . . or write us for details. Audio Products, Radio Corporation of America, Camden 2, N.J.

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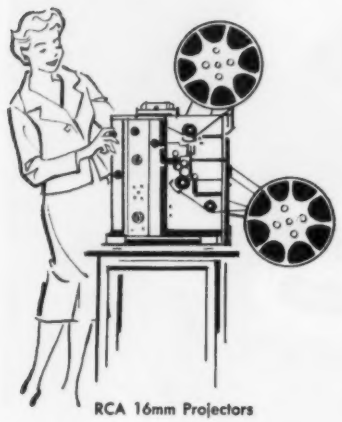

RCA 16mm Projectors

RCA Modular Sound Systems

RCA Record Players and Tape Recorders

GET MORE LONG RANGE VALUE FROM YOUR DOLLARS WITH RCA ELECTRONIC TOOLS FOR EDUCATION

Today, in spite of acutely rising prices, RCA Electronic Tools for Education offer greater value to schools than ever before. Because of a dynamic research program which has led to constant improvement in reliability and performance and because of their ability to meet the crucial demand of better education for more students, these products represent one of the best buys in the educational marketplace. They are an investment which will give dividends in continued service for years to come. Here briefly are some of the things you get for your money when you buy RCA.

In terms of function you are getting equipment which has been fashioned to help teachers teach *more* students *better*. Equipment which can bring a mountain of illustrative material—indeed any facet of world culture which has been recorded on film, tape or disc—into the classroom at the flick of a switch. Equipment which enables the teacher to devote more time to individual students, and which helps students to learn faster and retain more. Equipment which reduces the drudgery of drill for the teacher and which stimulates him to more creative effort in the classroom.

FOR "ACROSS—THE—ROSTER" USE

RCA Educational TV Receivers

RCA Teaching Devices—Language Laboratories and Electronic Trainers

In terms of product you are getting quality equipment from a company which is no electronics-come-lately in the educational field. RCA has been making 16 mm sound projectors for thirty years, and school sound systems for more years than that. This experience is reflected in an extensive line of products which provide dependable performance.

RCA's long association with the educational market has resulted in products specifically designed to meet this market's unique needs. For example, every product in the line features ease of operation and ruggedness of construction. With RCA Electronic Tools for Education you get equipment whose simplicity encourages use; equipment which will withstand the onslaughts of even the most spirited students, and which will give you on-schedule performance in class after class.

The modular construction of both language laboratory equipment and sound systems is another evidence of RCA's thoughtful design. These products were engineered for growing schools. You buy to meet your present needs only; expand when you need to. But, like the extra length in junior's trousers, the expansion is planned for. Thoughtful design permits the installation of additional equipment in short time and at a low cost.

Because of the dynamic nature of the electronics business, you get important value in research, too. RCA's intensive research programs in the broad areas of defense, consumer and industrial electronics result in a stream of remarkable discoveries, many of which have direct application in the educational field. From this sharing of research comes a constant series of innovations for product improvement at a quite low cost.

Looked at from any angle, RCA Electronic Tools for Education are an outstanding buy. They represent a uniquely low cost-per-student investment for a group of products whose value to education stands second only to the teachers they serve.

For more information, write RCA, Educational Electronic Audio Products, Bldg. 15-1, Camden, N. J.

RCA

The Most Trusted Name in Electronics

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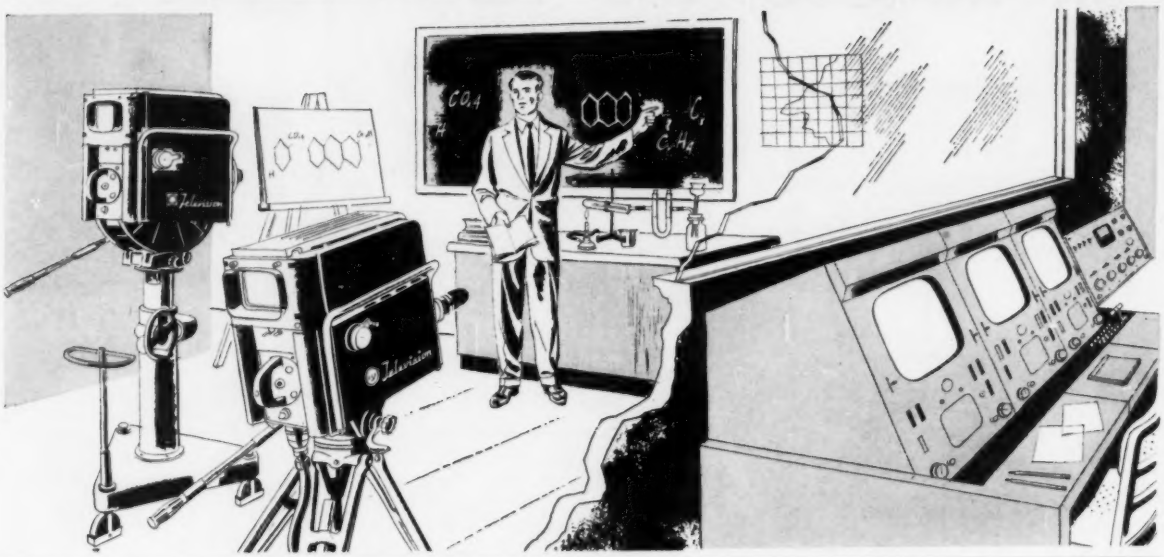
An advertisement to explain a basic principle of successful educational television.



2 CAMERAS—choice of vidicon, image orthicon or color cameras

CONTROL CONSOLES for video and audio

Effective Instruction via TV Begins with a Television Teaching Studio

A well-equipped *teaching studio* is essential to the success of television in education. Designed to meet the requirements of good TV practice, such a *studio* is the source of programs to classrooms. It has good acoustics and proper lighting to assure a high level of presentation, and will provide pictures of consistently good quality which flow smoothly throughout a TV lecture session.

A basic high-fidelity television teaching studio, with associated control room, is illustrated. Studio is equipped with two cameras and microphones. The use of two cameras facilitates a variety of picture material—close ups, long shots, visual aids, settings. Switching from camera to camera provides a change of pace to spark program interest and promote fullest attention from students. Control room is equipped with video and audio controls and switching facilities. This equipment can be readily expanded, as your plans develop and your goals increase, giving you needed supplementary facilities and protecting your investment far into the future.

If this concept of education by television strikes a responsive chord in your plans for progress, you will want to know more about RCA High Fidelity Television Systems. As a result of years of television experience, Radio Corporation of America is in a position to be of outstanding assistance in applying TV to teaching.

For an informative, new brochure "Educational Television," write to Educational Administrator, Television Equipment, Dept. R-80, Radio Corporation of America, Building 15-1, Camden, N. J. In Canada: RCA Victor Company, Limited, Montreal

The Most Trusted Name in Television

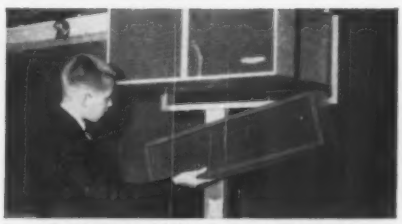
RADIO CORPORATION OF AMERICA

Big 262 sq. in. screen (21" overall diagonal) lets everyone see picture.

Only RCA VICTOR offers TV with so many features specially designed for classroom use

Front Tuning for easy, convenient operation

Set tilts easily to permit square-on viewing from any angle

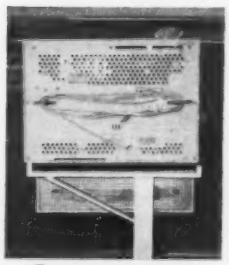


Removable auxiliary speaker can be placed anywhere in the room

RCA Victor's LYCEUM is specially engineered to meet the most rigid requirements for educational TV. It can be used for Regular or Closed Circuit telecasts, can be moved easily on the optional 5-foot, heavy-duty mobile stand, and can be securely locked when not in use. It has two 8" RCA Duo-Cone Speakers, with an optional third speaker for movement anywhere in the room.

For information on the finest educational TV, send the coupon today.

RCA The Most Trusted Name in Television
RADIO CORPORATION OF AMERICA



Tamper-proof back prevents unauthorized handling of set

Swing-out speakers fold in, make a compact unit you can lock

Easily moved. Set can be wheeled into any room for immediate use.

RCA Sales Corporation, Box 1226—A39, Philadelphia 5, Pa.
Please send me further information on RCA Victor Lyceum Educational TV Model 210-ET-750.

Name_____ School_____

Address_____

City_____ Zone____ State_____

For additional information, use postcard facing back cover.

How Imaginative Engineering Provided Air Conditioning To Fit A School Budget

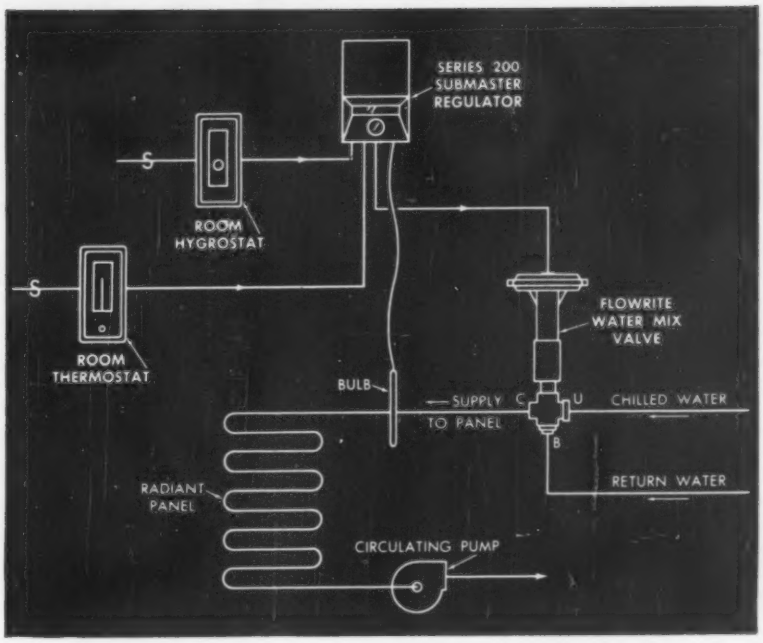
Must school air conditioning always be "too expensive"? Perkins & Will, Chicago architects and engineers, didn't think so last year when they designed suburban Homewood-Flossmoor High School. Without exceeding the school budget, they provided an air conditioned area large enough for complete summer sessions, including 15 classrooms, the library and all administrative offices. Actually, cooling for 25,000 square feet added less than 3½% to normal building cost — less than $4 per square foot of cooled area.

Homewood-Flossmoor High School, Flossmoor, Illinois. Air conditioned section (center) connects to other school facilities by glass-enclosed passageways.
Architects and Engineers: PERKINS & WILL, CHICAGO
Mechanical Contractor: THE ECONOMY PLUMBING AND HEATING CO. OF CHICAGO.

Perkins & Will team of architects and engineers works out details of the cooling system design features and controls for the Homewood-Flossmoor school. From left to right are F. Philip Brotherton, Designer and Project Architect; Rudolph J. Houkal, Chief Mechanical Engineer, and Edward C. Colin, Chief Structural Engineer.

How it was done

Perkins & Will grouped all rooms where both heating and cooling were desired into one section of the school. An interesting design feature is the core of 15 classrooms, surrounded on all sides by other rooms. The fuel savings realized from this "insulated" core help defray the added expense of cooling the entire summer school section. The engineers concentrated all mechanical service equipment beneath this section to eliminate long air conditioning channels. Double ducts and automatic controls were carefully designed for easy switchover to cooling and to take full advantage of tempered return air and outside air during spring and fall seasons.

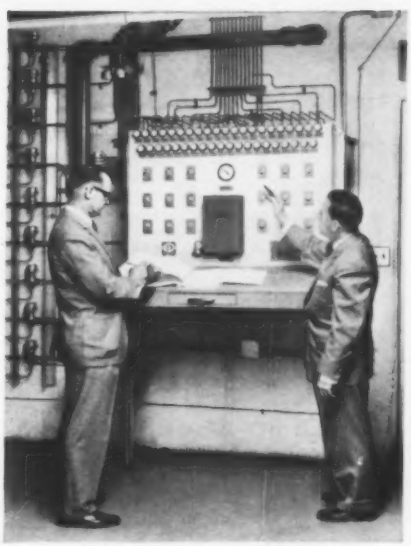


Ceiling Panel Condensation Control

To back up the mechanical efficiency it so carefully designed into the heating, cooling and ventilating system, the Perkins & Will firm specified a Powers system of pneumatic temperature control, including the important dew point control which acts on the chilled water auxiliary cooling used in rooms exposed to the outside. This control (see diagram) utilizes a Powers Water Mix Valve on the ceiling panel chilled water supply and a low limit Submaster Regulator. The Powers Hygrostat measures room humidity conditions and resets the low limit temperature to prevent condensation on panel surfaces, yet allows supply water temperature to be as low as possible for maximum cooling.

Fuel savings in all zones, including those not cooled, are maintained with Powers Day-Night zone controls. A 7-day program clock on the master control panel in the boiler room provides easy switching from day cycle to night cycle. This Powers pneumatic control panel automatically provides a 24-hour-a-day picture of temperature levels in all zones.

Write for the latest Powers Catalog of efficient, economical pneumatic controls for schools and other structures.



Homewood-Flossmoor Maintenance Superintendent William C. Drews (left), takes readings from the automatic Powers pneumatic control panel.

THE POWERS REGULATOR COMPANY
DEPT. 261, SKOKIE 7, ILLINOIS
Offices in Principal Cities in U.S.A. and Canada
MANUFACTURERS OF THERMOSTATIC CONTROLS SINCE 1891

NEWCOMB

pronunciator

MODEL AV-LSV

a new, compact, portable, economical language trainer

The Newcomb Pronunciator is a four-speed, variable-speed, compact phonograph with an earphone-microphone headset. It is designed primarily as a pronunciation comparator in foreign language teaching, but it will undoubtedly find many additional applications in libraries, laboratories, reading rooms, and other classrooms. The Pronunciator is an efficient teaching tool for pupils of all ages. When the student repeats a word into the microphone, he hears exactly how his voice sounds to others as well as how closely his pronunciation approximates that of the recorded voice. Circuit of vocal sound through microphone-amplifier-headphones in effect bypasses hearing through bone conduction – the usual means of subjective perception – and gives an accurate, objective representation of how the student's voice really sounds. There are separate volume controls for phono and microphone. The Pronunciator is equipped with the Newcomb Acra-Set tone arm lifter. This permits, with the turn of a knob, introduction of a pause between words and simplifies repetition of a passage. It also protects the record. The Pronunciator capitalizes on the advantages inherent in disc recordings – ready availability, low cost, and ease of operation. Virtually all students are already familiar with phonographs and will know how to operate the Pronunciator with only a minimum of instruction. Not only is the acquisition cost low, but the Pronunciator requires no architectural modification or expensive construction. Yet it is surprisingly versatile, has an input jack for audio signals from a tape recorder, radio, or teacher's amplifier, also has an output jack to teacher's monitor and an a.c. outlet for film projector. It requires little maintenance, is as ruggedly built and dependable as all Newcomb Audio equipment. It weighs just 12½ pounds, can be easily carried from one room to another or taken home for special assignments. It takes up little room in storage – measures 6⅜"x9⅜"x14¾". It plays any size record up to 12". Write for your free copy of Bulletin AV-11 which describes the Pronunciator in detail. Handy bid specifications are also available to qualified personnel.

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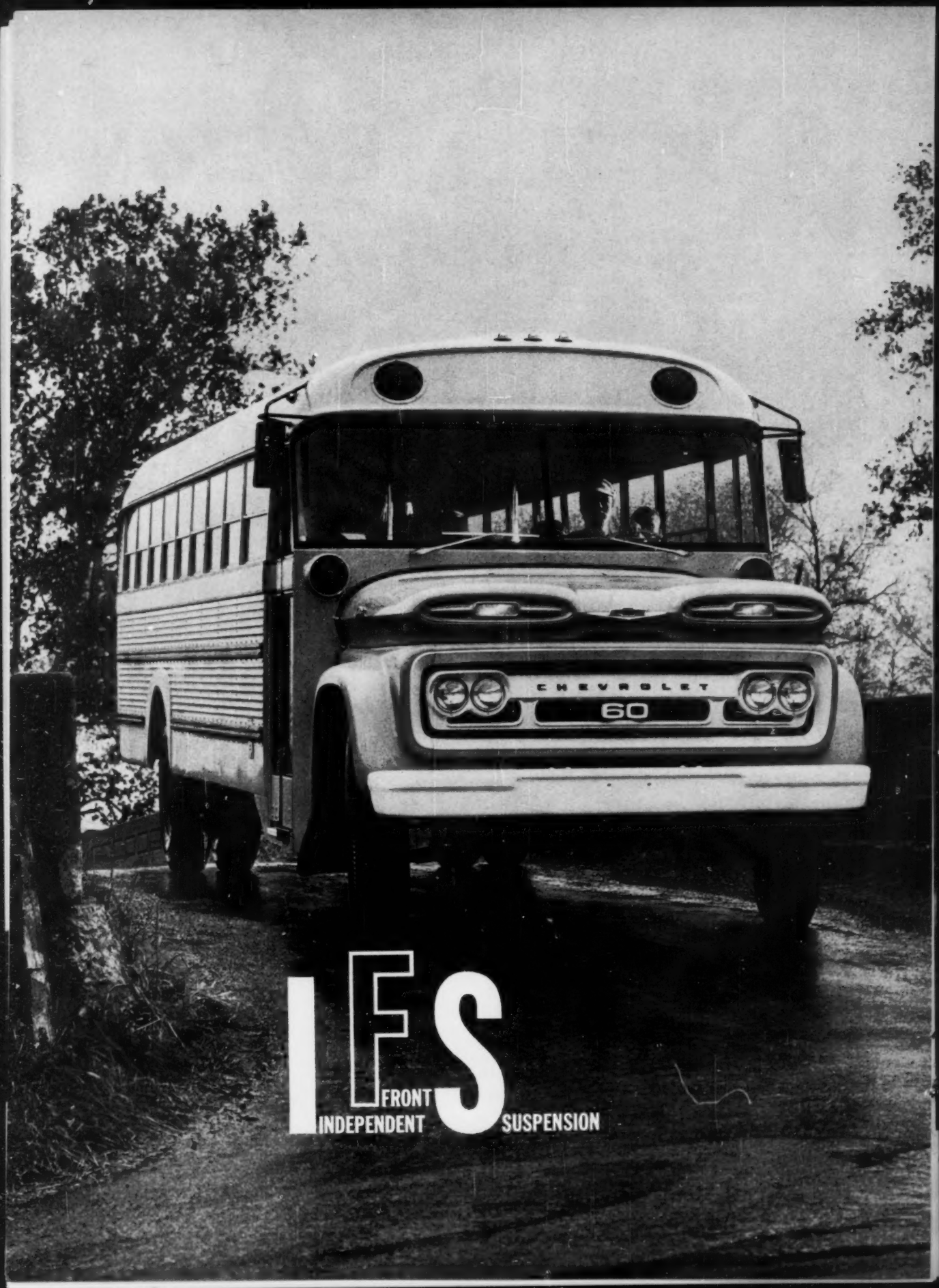

CHEVROLET
60
IFS
FRONT
INDEPENDENT
SUSPENSION

THIS "BUS BUYER'S QUIZ" TELLS WHY CHEVROLET I.F.S. (FRONT INDEPENDENT SUSPENSION) MEANS BETTER SCHOOL TRANSPORTATION

With bump-beating Independent Front Suspension (plus extra-rugged chassis and engine components) Chevrolet school bus models for '61 are out to set new records for saving, safety and performance. Here's a quick quiz that will answer some of the questions you might have concerning this big Chevrolet advance in school transportation.

■ *How does Chevrolet Independent Front Suspension work to improve school bus performance?*

A When a bump looms up, Chevy's independently suspended front wheels "walk" right over it. Rugged control arms help assure stable, safe handling; help prevent temporary misalignment by big bumps or heavy loads. At the same time, friction-free torsion springs do a better job of absorbing bumps and *cushioning* the ride. And front shock absorbers (standard equipment!) offer maximum ride control. Result: smoother, safer school bus performance with far less wear and tear on all components.

■ *How does Chevrolet's front suspension differ from that of some other school buses?*

A Basically, the Chevrolet design eliminates the rigid I-beam front axle and stiff leaf springs which tend to transfer road shock to chassis components, body and passengers.

■ *How does Chevrolet Independent Front Suspension affect operating costs?*

A Because Chevrolet school buses ride so much more smoothly, *all* components are protected from costly damage due to severe road shock. This means that Chevy buses will last longer—and keep your repair and parts replacement costs to a bare minimum.

■ *Is tire life affected in any way?*

A Conclusive engineering road tests have shown that Chevrolet's Independent Front Suspension can extend useful tire life by eliminating I-beam axle shimmy, a major cause of flat spots and tire cupping.

■ *How about handling ease, from the standpoint of the driver?*

A Independent wheel action minimizes the wheel fight caused by transfer of road shock through linkage to the steering wheel. Rugged control arms and low-friction spherical joints guide the wheels precisely while Chevy's friction-reducing ball-gear steering provides almost effortless wheeling.

■ *Do all Chevrolet school buses offer this new suspension?*

A Yes. From the Suburban Carryall which holds 8 passengers to the big Series 70 model which will accommodate a 66-passenger body, *all* 1961 Chevrolet school bus chassis provide I.F.S. as standard equipment. I.F.S. is not brand new, however—there are now more than 300,000 1960 and 1961 Chevrolet I.F.S. buses and trucks at work throughout the country.

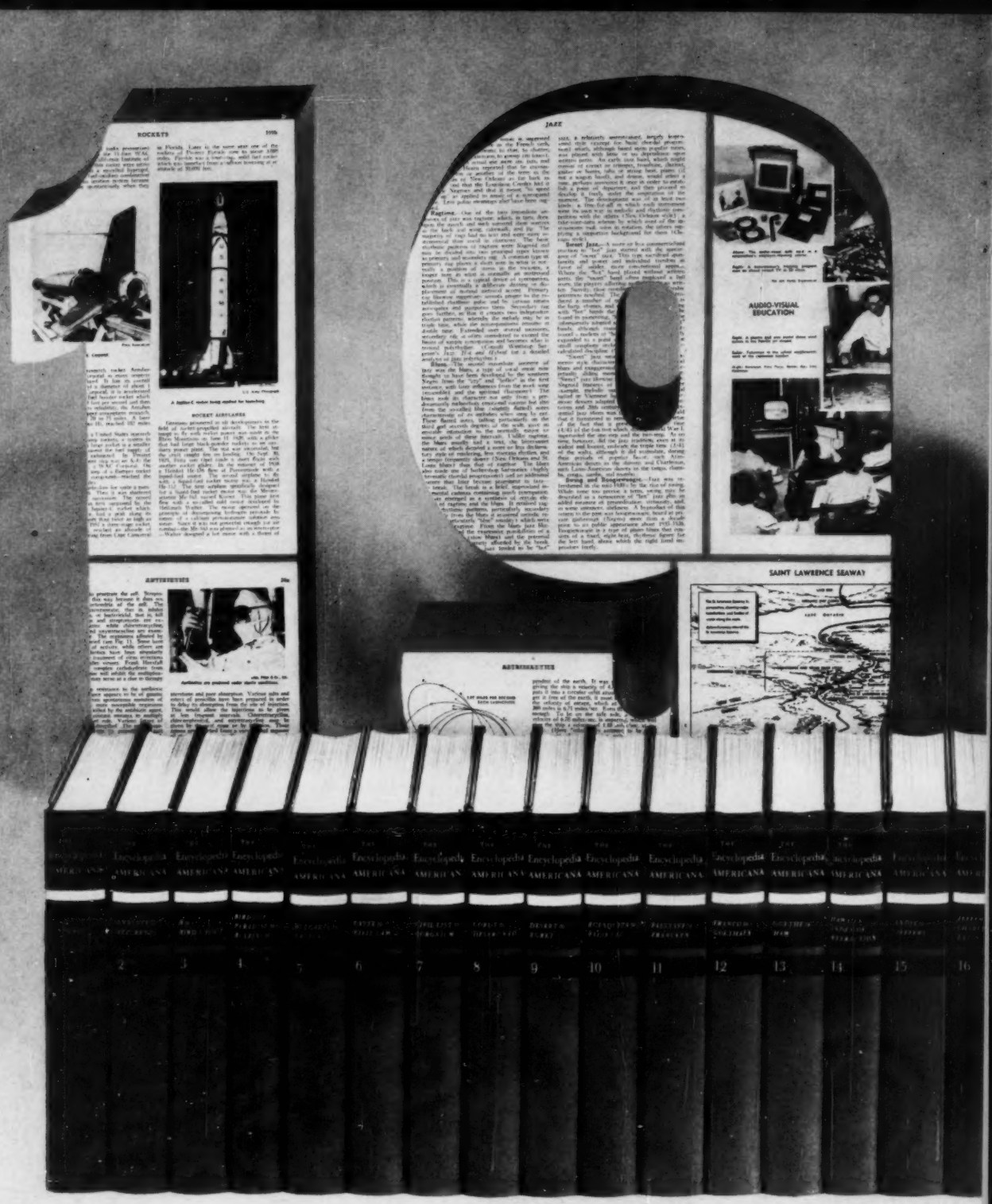
■ *What type of rear springs are used by Chevrolet?*

A All Chevy school bus chassis are equipped with unique variable-rate rear springs. Spring stiffness automatically changes to provide extra riding comfort under all road and load conditions.

■ *Where can I get further information on Chevrolet's school bus models?*

A Your Chevrolet dealer has all the facts at his fingertips. He can brief you, for example, on the famous money-saving 6's and short-stroke V8's that power 1961 Chevrolet school bus models. He'll be glad to fill you in on *all* the facts about the complete line of Chevrolet models for school transportation.... Chevrolet Division of General Motors, Detroit 2, Michigan.

THE VALUE BUY IN SCHOOL TRANSPORTATION CHEVROLET



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Stars of 1960 **SINGER** Young Stylemaker Contest

Top thrills of sewing! These Grand Winners outsewed 60,000 girls in the 1960 Young Stylemaker Contest. They were among 5000 who won prizes including sewing cases and SINGER* Sewing Machines.

The 15 top regional winners (five from each Division) traveled to New York for an expense-paid round of sight-seeing, plays and judging—for which they modeled their own creations.

Start planning now for a 1961 winner from your school! Use these success stories to encourage your students to enter the 1961 Contest . . . open to girls 10 to 21 who enroll in the SINGER Contest Dressmaking Course. There'll be thousands of winners . . . *no losers!* Everybody improves sewing skills, and has fun making a dress, suit or other wearable. Watch for contest rules to be published soon.

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Teen Winner—15-year-old Texas belle, Cheryl Ann Little of San Antonio won United States Tour and $600 with this black and white checked wool suit. Vogue #1637.

Tween Winner—Frances Wargo, 13, bright-eyed Bellaire, Texas lass, sewed up top prize of U. S. Tour and $400. She made her green wool dress from Simplicity Pattern #3541.

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Listed in your phone book under SINGER SEWING MACHINE CO.

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Chair seats, backs, and their relationship to each other, assure best posture; tablet arms are proportioned for proper writing pitch . . .

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Featured in THE HEYWOOD LINE is the color-impregnated, solid plastic—HeyWoodite, a patented Heywood-Wakefield exclusive. This thoroughly tested material won't burn, break or stain . . . requires no maintenance, no refinishing, no repairs. Famous Heywood-Wakefield craftsmanship combines this virtually indestructible material—or plywood, solid wood or laminated plastic—with lifetime nickel-chrome-plated tubular steel . . . backs up superior construction with responsibility for installation and service. You choose from the nation's top-quality furniture, tested in the nation's schools . . . to meet *your* specific needs and *your* school's allowance for furniture expenditure.

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auditorium seating
by HEYWOOD-WAKEFIELD

assures supreme comfort, easy maintenance, long life

Hundreds of school auditoriums and public assembly rooms attest to this truth: Heywood-Wakefield's auditorium seating line successfully meets every need. Fixed and movable units include chairs with veneer seats and backs, with spring or rubber cushions, with padded or spring-filled backs. You may select wood or steel end standards, manual or self-rising seats. Choose from an unusual range of fabrics, metal colors, and wood finishes. Like the auditorium line, Heywood-Wakefield's portable seating and folding chair lines offer you luxury and service that no other line can match.

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When you see and sit in any unit, you'll approve the thoroughgoing comfort, the beauty of color and design . . .

T-300

Chairs fold compactly with one simple motion, can be stored neatly, require a minimum of storage space.

See your Heywood-Wakefield representative, or write for catalog.

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Printed in U.S.A.

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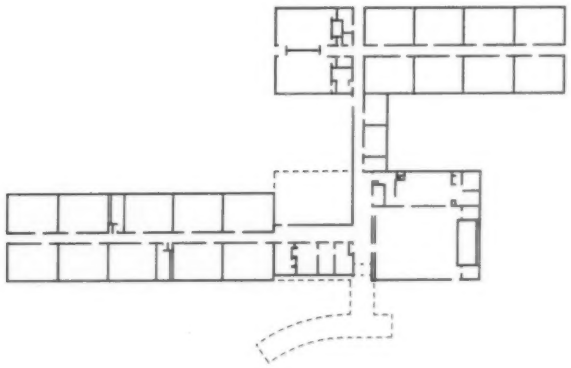

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The Hopewell Township Elementary School looks right at home in this valley in Beaver County, Pennsylvania. It's an AmBridge Modular School—all the components arrived at the job site precision fabricated and ready to go up. A handful of men did the actual construction in only 5½ months, after foundation. The township saved money when they built it: $16.98 per square foot; $1,013.00 per pupil. They'll save money from now on because the school's a breeze to maintain. Tough, baked enamel steel interior partitions sparkle with an occasional wipe. Colorfast porcelainized exterior walls will still look new when today's first graders have children in school here. Write for our 24-page booklet on AmBridge Modular Schools. American Bridge Division, United States Steel, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

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St. Francis de Sales School, Lake Geneva, Wisc. Architects-Engineers: West & Anderson, Genoa City, Wisc. Windows are glazed with *Thermopane* insulating glass.

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Children can enjoy the open world around them behind the protection of *Thermopane* insulating glass. They can sit next to windows in winter without getting chilled. That saves classroom space. And *Thermopane* keeps rooms cooler in hot weather . . . muffles distracting outside noise. Children are more attentive, their minds more retentive. Teachers say *Thermopane* reduces absenteeism. ■ *Thermopane* pays for itself by cutting heat loss and air-conditioning cost. Talk to your architect about it. Or write to L·O·F for technical information, 5121 Libbey · Owens · Ford Building, Toledo 1, Ohio.

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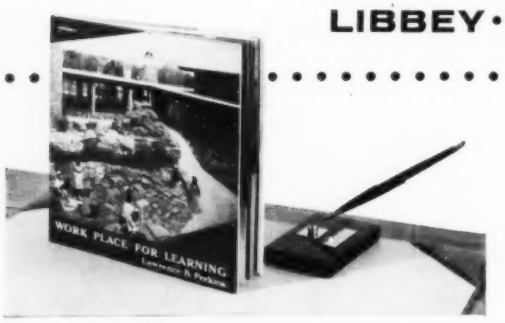

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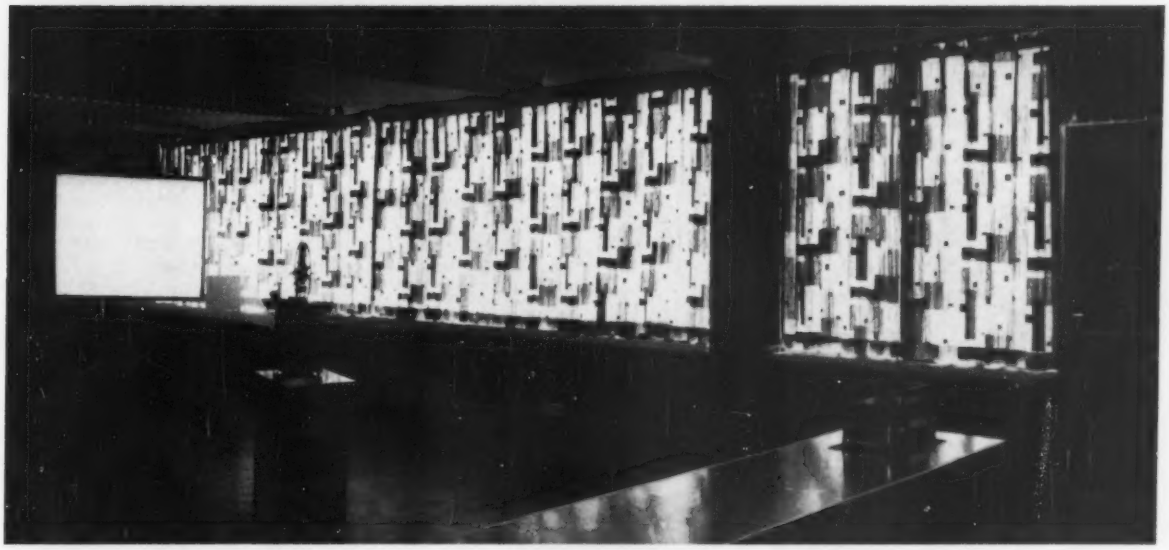

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On the Shelf

(*Continued From Page 22*)

that, while I try to be completely truthful, I can hardly be called an impartial observer. Though he has sturdy, skitempered legs of his own to stand on, Cy Seymour is, in a sense, my boy. After Middlebury College, some years of teaching, a Harvard doctorate, and a tour as superintendent of two Indian schools in New Mexico, he came to Rochester in 1940 as guidance director, moving to coordinator of child services, and then to assistant superintendent in charge of guidance services, and finally to the post of deputy superintendent during the period he served as superintendent-elect.

Dr. Seymour soon came to know schools and teachers and pupils better than any of us at the central office. He sent his two sons to our public schools and was a leader in Scouts, Y.M.C.A. and all manner of youth agencies – putting his shoulder to every good wheel on behalf of young people.

With a superb talent for cooperative human relationships, he knew how to win the help of employers for our guidance program and how to work with every constructive community agency. Without compromise of his loyalty either to the teachers or to the administration and the board of education, he served as chairman of the teachers salary negotiating committee and as president of the Rochester Teachers Association. He was respected on both sides of the table.

It was natural that such a man should be thought of as a likely successor to the superintendency, when and if. Our other people with administrative experience were beyond the eligible age bracket. Without his own knowledge but with the full knowledge and warm approval of the board, Cy Seymour was groomed for the job. Announcement of the succession was made nine months before my retirement at the close of 1954. Staff and community reaction was enthusiastic.

For six years I had seen Cy only rarely, just about long enough to say hello. I respected his busy schedule, and I was conscious that any and every retired superintendent should be sent to the Celebes so that he couldn't mess around in school issues and be a "pain in the neck" to his successor. For the most part I was tucked up on the shelf away from the stream of local events and social contacts.

Then something happened – a new school board and a growing anxiety in the community! Pertinent editorials and letters to the editor appeared early in the fall. Challenged to say something helpful about board-superintendent functions and attitudes, I fell briefly off the shelf just long enough, and with strong misgivings about my temerity, to write a couple of columns.

I feared that as a case-hardened ex-administrator I might serve only as a challenge in a china shop. But that was in late October, and the indications were and are that the Indian sign was on Cy long before I popped off.

School board selected on partisan basis. In spite of our long freedom from significant educational hassles, the roots of the present difficulty went far back into our structure for school governance. In Rochester, two board members are elected on party ballots in one biennium and three are selected in the next biennium; each serve a four-year term and get an annual salary of $1200. Vacancies occurring between elections are filled by the mayor.

From shortly after the turn of the century, the tradition held that the schools should not be "in politics." By mutual endorsement of candidates, at least one Democrat was assured of board election in what in the old days was an overwhelmingly Republican city. The tradition ended in 1930 when, the Democratic member having resigned because of business pressures, the mayor appointed a Republican and gave us a one-party board again.

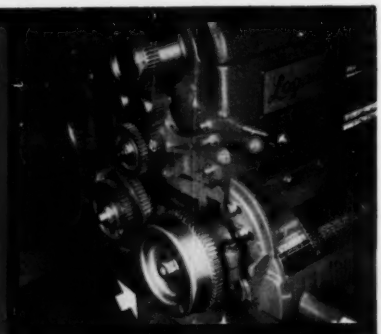
In 1933 a Roosevelt landslide brought

(*Continued on Page 50*)

new safety feature!

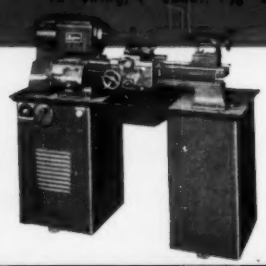
Logan

Automatic Safety Gear now standard equipment on 10" and 11" models



All Logan 11", 12" and 14" lathes, as well as models 1825 and 1875 (*shown*) 10" lathes, now offer positive overload protection without additional cost. Exclusive Automatic Safety Gear absorbs shock of sudden overloads when threading, preventing gear damage from spindle to gear box. Also protects all gears in gear box up to 52 threads per inch. The combination of this Safety Gear and spring-loaded lever-operated clutch in apron gives the same protection for corresponding feeds. Can be factory-installed on other models of new 10" and 9" quick-change lathes. Available for present Logan quick-change lathes: $10 for 9", 10" and 11" sizes, $15 for 12" and 14".

12" Lathe



10" Lathe

For full model details and evidence of Logan's *low upkeep* and *better service*, see your Logan dealer, or write for catalog.

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One slight push and big doors open surely and easily . . . when guarded with CORBIN Automatic Exit Fixtures.

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Functionally styled, with choice of trim to suit all requirements . . . masterkeyed with other CORBIN Locks, if desired.

Available in cast brass, bronze or aluminum . . . in all standard finishes . . . for single doors, for double doors . . . for entrance and exit, for exit only. *Exclusive feature: all lever arms are drop forged, and equipped with oilite bearings.*

Here is CORBIN craftsmanship at its best!

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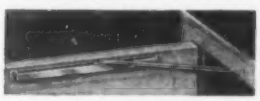
CORBIN BALL BEARING PIVOT HINGES

Top, Intermediate and Bottom Pivot Hinges to meet any load requirement. Completely sealed and lubricated for a lifetime of smooth, trouble-free, truly anti-friction performance. Outstanding feature: adjustable to permit raising and lowering of door to equalize the load on load-carrying pivots. Radial roller bearings and ball thrust bearings.

CORBIN "880" HEAVY DUTY OVERHEAD DOOR HOLDER



Top performance for either exterior or interior doors. Dependable CORBIN quality evidenced by the following features: Inconspicuous . . . rugged . . . greater holding area . . . front mounted "off-and-on" lever . . . tension control screw easily accessible . . . 110 degree opening . . . heavy extruded brass track . . . extruded brass slide . . . deeply case-hardened dog and latch . . . concealed buffer spring . . . forged brass end brackets.

Ask your Architect or Consultant about CORBIN performance.

IT PAYS TO MAKE IT CORBIN—THROUGHOUT!

(*Continued From Page* 48)

a Democratic majority to the school board; in 1937 an anti-Roosevelt swing returned a Republican majority to the board — a condition which continued until this year. Two Democrats took office on the board in 1958 and two more in 1960.

The school board is now composed, if it can ever be called composed, of three housewives, each with brief teaching experience (one is the lone Republican, and the other two are Democrats — one of whom is president of the board), and of two men (Democrats who took office this year — one a lawyer and vice president of the board; the other a doctor.

Board starts seven "studies." With a secure majority, the new board started out to bowl a 10 strike game the first time up. It appointed seven all-embracing committees, one of them "to study the causes of inflation and possible remedies to help reduce educational costs."

Too oblivious of what the ongoing administration of the schools and their routine emergencies entailed, the school board ran the superintendent ragged with demands for reports and all-at-once action on all fronts. One member, in a curious exhibition of responsible boardsmanship, openly applauded himself for harassing the administration with all the tactics of a prosecuting attorney.

Another member was so opposed to "secret meetings" that the board and superintendent had little chance to explore matters together. They could talk with each other only in public when problems had crystallized into proposals. At board meetings the small but vocally aggressive Rochester F.C.T. (membership estimated at 200 or 300 out of a total 1800) claimed a disproportionate share of the board's collective ear.

Start hassle with surprise move on salaries. The first outward clash of board and administration came when, in a public meeting (I heard it live over radio), the superintendent's budget recommendations were brushed aside with curt "we-are-going-to's" and a motion was made for a reallocation of funds that involved a major policy change. The proposals were saved from instant adoption only by a last minute, timid suggestion that perhaps the superintendent might wish to say something.

Dr. Seymour could only respond that the proposals were all news to him, and he asked for time to study them. The motion would have given classroom teachers a 12 per cent salary increase, administrators nothing. The whole schedule thus would have been thrown out of adjustment — in contravention of a recommendation of a distinguished citizens' committee. The matter was compromised later, but the board had come close to illegal action. By law the superintendent has a right to speak on every issue.

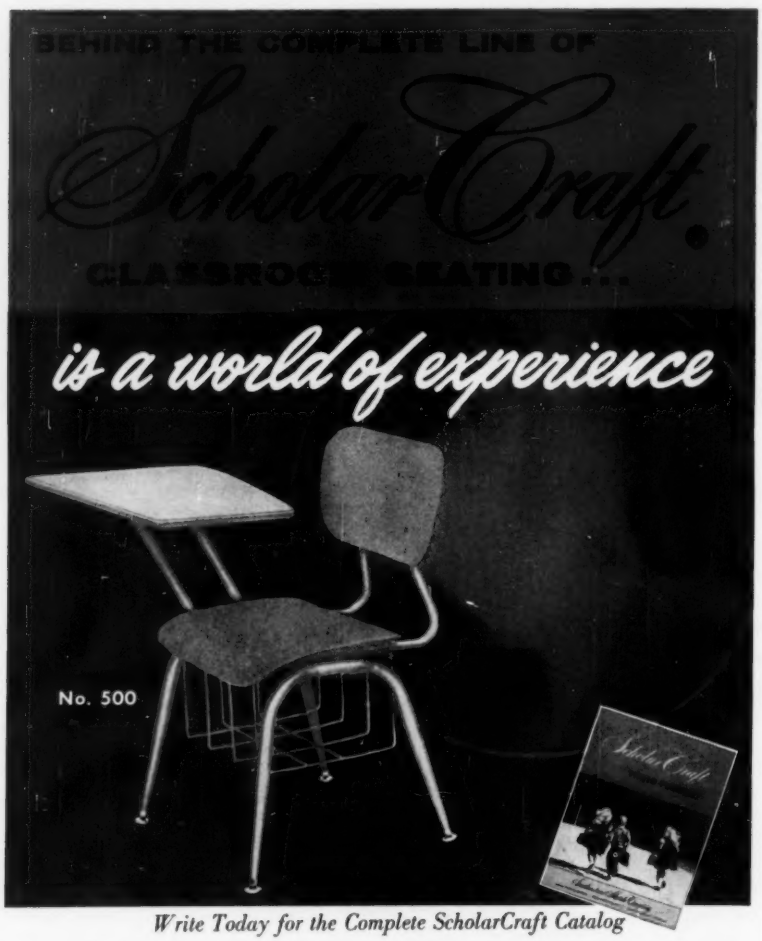
In further discussion, this time in executive session, it is said that the superintendent and two of his aides threatened to resign if the board insisted, as it seemed to be doing, on submitting an unbalanced budget to the city council.

Two other matters strained relations further: One was a survey of teacher morale; the other was the release of a high school principal. The survey was made in March, two months after the new board took office. It was authorized by the superintendent. The purpose was to spot sources of dissatisfaction, to remedy them if possible, and thereby improve administrative-staff relations. The new survey was entrusted to Science Research Associates of Chicago.

Survey of teacher morale used as excuse. To the astonishment and chagrin of both the majority of teachers and of the research association, the summary of findings was used as virtually the sole basis for releasing the superintendent. The board president's official statement of reasons for its own loss of confidence in him was made up (85 per cent by volume) of quotations derived from the report.

Leaders of the Rochester Teachers

(*Continued on Page* 136)



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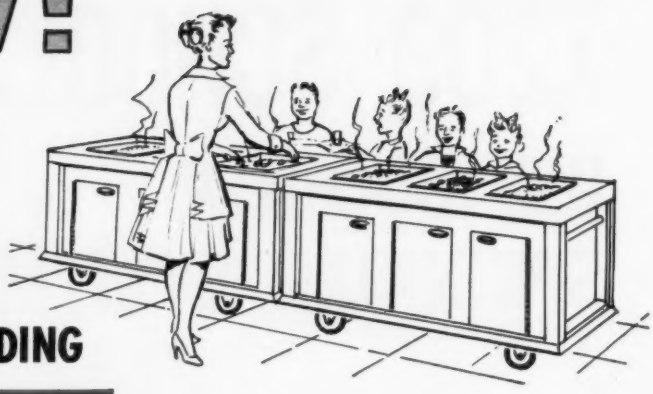

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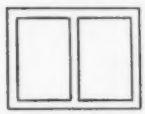

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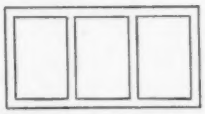

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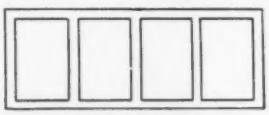

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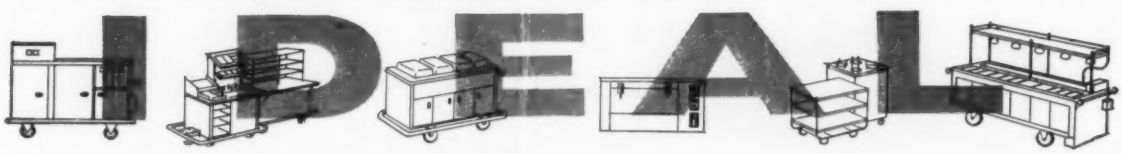

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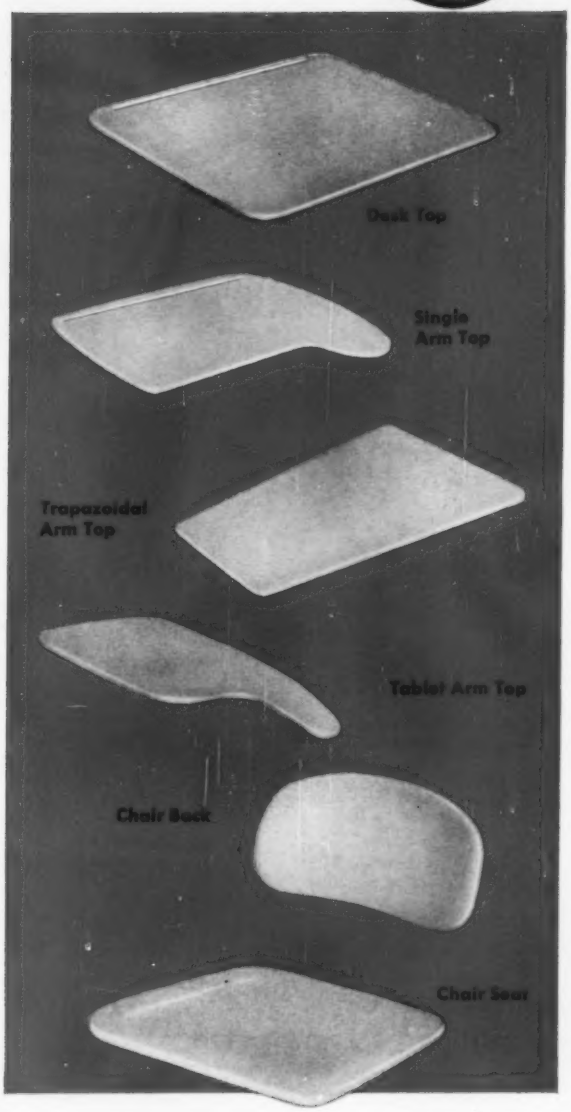

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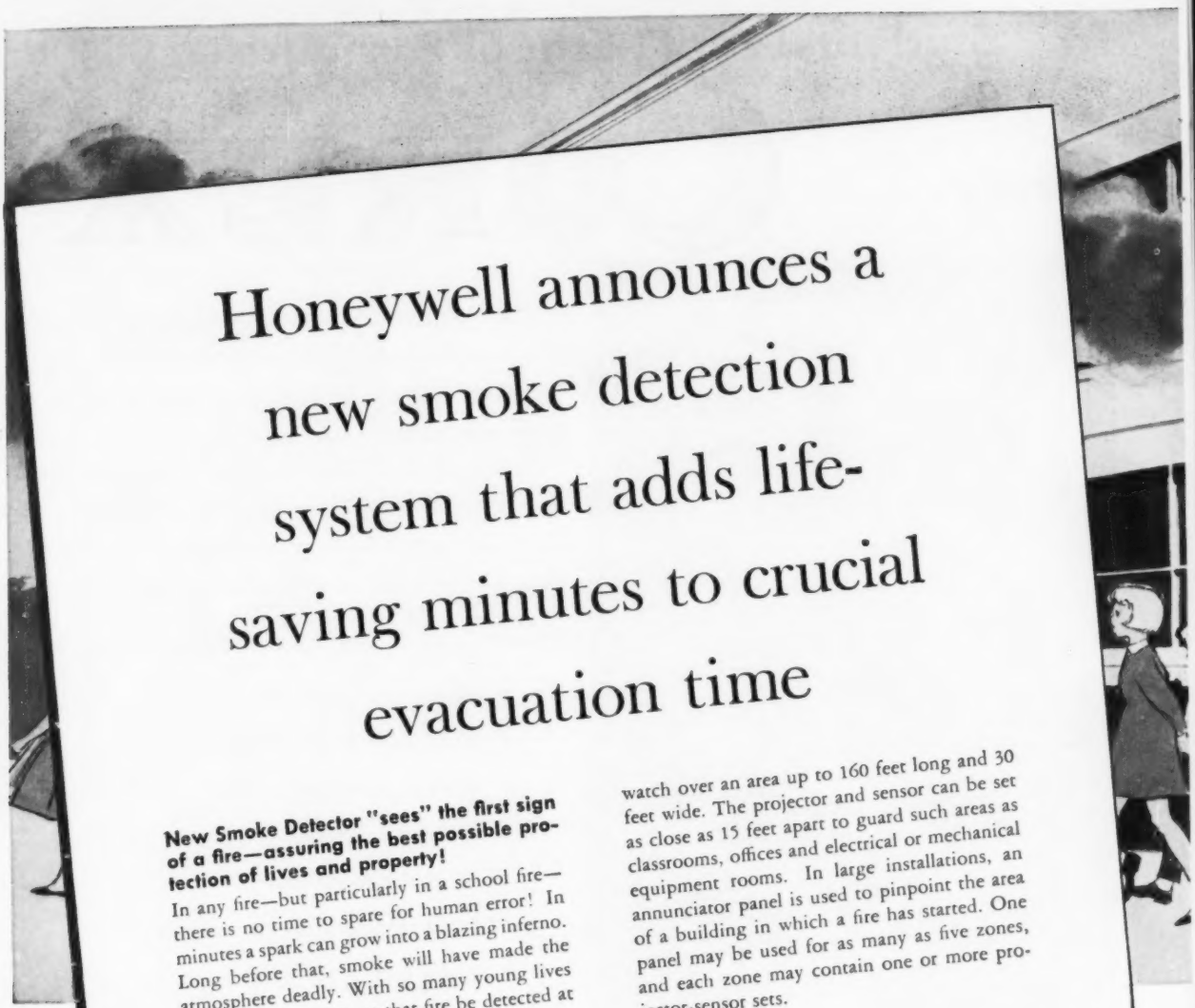


Honeywell announces a new smoke detection system that adds life-saving minutes to crucial evacuation time

New Smoke Detector "sees" the first sign of a fire—assuring the best possible protection of lives and property!

In any fire—but particularly in a school fire—there is no time to spare for human error! In minutes a spark can grow into a blazing inferno. Long before that, smoke will have made the atmosphere deadly. With so many young lives at stake, it is important that fire be detected at the earliest possible moment.

Now Honeywell has developed a new smoke detection system that *sees* the first sign of a fire —smoke—first. It saves valuable minutes. And these minutes saved can mean lives and property saved.

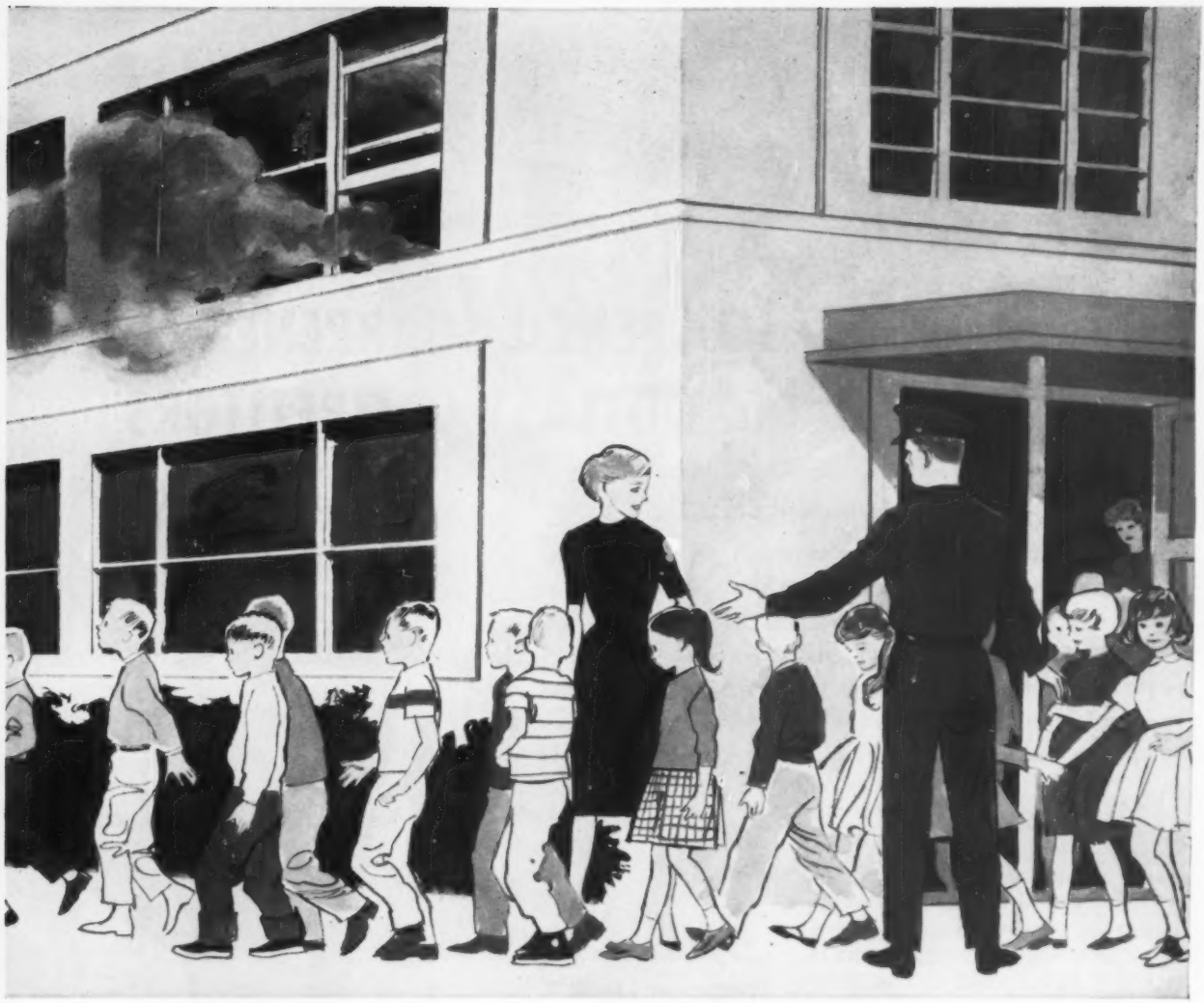
Compare, and you'll find Honeywell's new Smoke Sentry the fastest detection system available. It stands guard over large, open areas with a constant beam of light. When smoke interrupts this beam, an alarm sounds instantly. Even the tiniest wisp of smoke from a hidden fire will be *seen* and will trigger the alarm mechanism.

Never before, a smoke detector that safeguards an area the size of a basketball court—round-the-clock!

A single Smoke Sentry projector-sensor set will watch over an area up to 160 feet long and 30 feet wide. The projector and sensor can be set as close as 15 feet apart to guard such areas as classrooms, offices and electrical or mechanical equipment rooms. In large installations, an annunciator panel is used to pinpoint the area of a building in which a fire has started. One panel may be used for as many as five zones, and each zone may contain one or more projector-sensor sets.

It's the latest addition to Honeywell's complete fire alarm system for every building, every situation!

The Smoke Sentry can be used in addition to Honeywell's Fire Detection and Alarm System for total protection in critical areas. The combined systems offer four-way safety: fast automatic detection—manual stations—local alarm —and automatic calling of the fire department. For further information about the new Smoke Sentry, call your local Honeywell office. Or write Honeywell, Minneapolis 8, Minnesota. In Canada, write Honeywell Controls, Limited, Toronto 17, Ontario.



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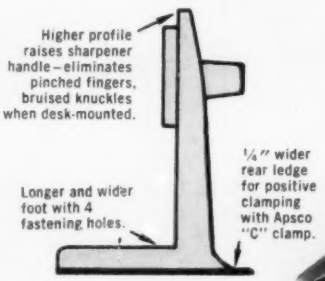
Cut Your Replacement Costs!

Built to take the punishing abuse of day-after-day school-room use, Apsco Sharpeners continue to put sharp, clean points on pencils after years of service. Proven best by years of actual use in school systems, Apsco Pencil Sharpeners were recently subjected to rugged endurance tests by impartial testing laboratories. In every test – durability, workmanship, design and operation – Apsco Pencil Sharpeners came out on top! If your school works on a "tight" budget, start saving important dollars on pencil sharpener replacement – specify Apsco Pencil Sharpeners!

THIS NEW SUPER-STRONG #145 ZAMAK BASE IS SUPPLIED ON THE GIANT, CHICAGO AND PREMIER STANDARD MODELS.

THE APSCO SHARPENER BASE IS UP TO 180% STRONGER – HEAVIER WHERE IT NEEDS IT AND... MORE DURABLE!

New internal gear is an integral part of the base. Ninety degree angles in design of bottom-cored base and in foot, increase strength by 130% over former models. A longer, wider foot with four screw holes permits mounting in any position on shelf, desk, or wall. Heavy-duty receptacle locks in place with an all-steel ring staked at six points.


Higher profile raises sharpener handle – eliminates pinched fingers, bruised knuckles when desk-mounted.
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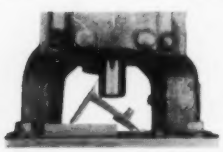

This is one of the high-pressure testing devices that proved the superiority of Apsco Pencil Sharpeners.

Apsco cutterheads feature hollow-ground cutters that shave instead of grind for cleaner operation; metal pinion gears for longer wear.

Full gear surface of cutterhead pinion meshes with integral gear teeth to diffuse pressure, lessen gear wear.

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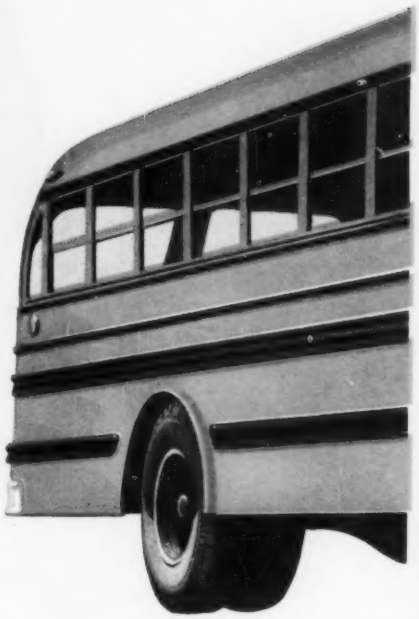

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Ford's '61 School Bus models are unsurpassed in safety and durability—put you way out front in long-lived economy! Every major chassis component is built to comply with the most up-to-date requirements of the National Education Association. Ford's modern, functional "flat face" cowl design permits an integrated look for all types of bodies—right up to the big 66-passenger size.

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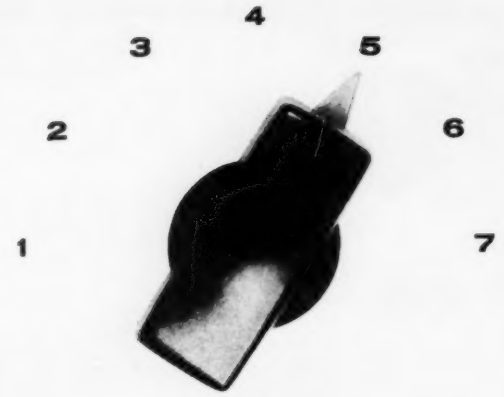

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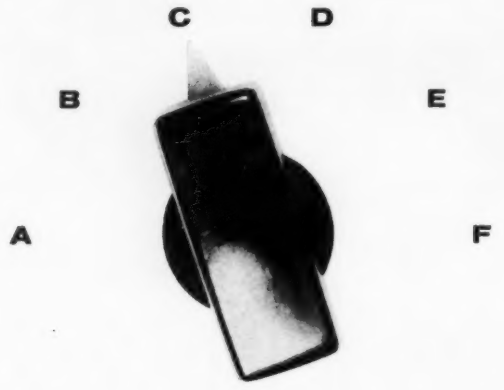

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LOOKING FORWARD

N.D.E.A. Is an Unwise Compromise

CONFLICTS in Laos, Cuba and the Congo involve critical decisions which worry us much, but concerning which we as educators seem to have very little influence. There is another critical decision, now shaping up in Congress, concerning which the voice of the educator will be heard and heeded, but about which we don't seem to be worried. It's the critical decision as to whether we are going to turn over to Congress the control of the curriculum of our public schools.

Most of us have been taught that the control of education is the function of the state. To us it seems unthinkable that anyone would want to substitute Congress for our state and local boards of education and to substitute a federal bureau for our state departments of public instruction. Such a national system of education brings the public school dangerously within the control of political parties and bureaucracies.

In a country like ours, changes in the controls exercised by various units of government seldom occur abruptly. They come about through compromises – a principle is compromised for the sake of financial aid or other tangible gains. One compromise leads to another – and soon the cause is lost.

And this is the issue – this is the danger – inherent in the National Defense Education Act. The Act expires in 1962, but whether it should be continued, expanded or discontinued is a decision that school people should recommend to the Congress and to the public very soon.

There's no question in the thinking of the Executive Committee of the American Association of School Administrators as to what should be done with the National Defense Education Act. At a recent meeting, the Committee expressed the judgment that "the N.D.E.A. has been cumbersome, expensive to administer, characterized by too much red tape, and, in several respects, it exerts control and federal direction to the public school curriculum which are unsound in terms of national and state policy." The statement continued:

"The Executive Committee of A.A.S.A. believes that future federal financial assistance to public schools should not follow the categorical type such as N.D.E.A. The Committee believes that the next Congress should pass a general support bill for the operation and capital improvement in public schools, with the specific use being determined by states and local school authorities."

State superintendents of public instruction, as represented by the Council of Chief State School Officers, seem willing *to continue the compromise*. Resolutions adopted at their annual meeting in Santa Fe, N.M., stated that "the Council favors the appropriate amendment and extension of the National Defense Education Act, inasmuch as its operation as an emergency measure has been of considerable assistance to education, and can continue to be of even more assistance in the future."

Recommending that the Act be extended for a term of "not less than four years," the Council then urged that Title III be amended "to include English, history, geography, economics and government, along with the original fields of science, mathematics and modern languages, as subjects of instruction in secondary schools that will be aided under this title."

The state superintendents also urged that Title VI be amended "to include English, along with foreign languages," for the purpose of that title.

The Council recommended that Title VII be amended "to include authorization for experimentation and research projects by state departments of education covering all or any part of the curriculum of the elementary and secondary schools."

This "expansion" point of view on the part of the chief state school officers is not unanimous. When the question was submitted at the annual meeting of the Council, only 67 per cent of those who expressed themselves favored extension of the N.D.E.A., but 100 per cent favored general support of public education for construction or current expenses.

Another of the Council's resolutions declared: "The interests of American public elementary and secondary education will be served best by permanent, broad-purpose federal financial *support*, rather than by limited emergency federal *aid* for special purposes. The Council is most concerned that federal support funds be made available to the states in such way that state and local control of education will be *strengthened*. It urges, therefore, that allocations of federal funds constitute, in effect, an additional revenue source which the states can apply to the most critical areas of educational expenditure."

Isn't there a contradiction here? The Council asserts that it wants to protect and strengthen local control, and that it wants the *states* to determine the manner in which education funds shall be allocated, and yet it is

willing to perpetuate federal legislation which contradicts these principles!

There is an old saying that "two wrongs do not make a right." In the great rush and confusion of this era, has this moral precept been changed, too?

If, as the A.A.S.A. Executive Committee and many other superintendents believe, the N.D.E.A. is wrong in *principle*, is the situation improved by doubling its scope and total appropriation? If, under the present Act, Congress exerts strong influence over 30 to 40 per cent of the curriculum, does it remedy the situation to extend congressional control to 60 or 80 per cent of the curriculum? And, if the Act is so amended that it covers most of the public school program, is it any longer an "emergency defense" act?

Congress passed this collection of laws back in 1958 in an atmosphere of fear and hysteria.

Has the nature of the emergency changed? If so, what are the emergencies now? And what are the best ways of meeting these new emergencies?

And finally, are there some parts of the N.D.E.A. that are worth keeping or revising?

In its total approach, the National Defense Education Act is narrow in its concept and dangerous in its application, although undoubtedly well intended in its original enactment. In some of its titles, the Act provides for activities that might well be continued as a federal service to education under auspices of the U.S. Office of Education, for example, the research sponsored under Title VII. This is a service that properly and profitably can be encouraged through funds administered by the U.S. Office of Education. The article this month by Dr. C. Walter Stone (page 100) reveals how desperately education needs personnel and technics for its research efforts. Likewise, Title VIII is consistent with the total purposes of the N.D.E.A. in that it orients the vocational program toward defense needs; however, such purposes can be included in the general pattern of vocational aid without being incorporated in emergency legislation.

Without in any way diminishing the efforts of public education to provide the scientists, linguists and technicians needed, the emergency program *today* calls for emphasis on *all* the major purposes of public education in a democratic society such as ours. It is the total productivity of this nation, its morale, and the quality of its citizenship that gives us strength for a cold war. Congress can serve this purpose best by appropriating broad support for a public school system that made this country great, and that can continue to do so.

Something for Grandpa

THE biggest problem in public relations, as it is reported to us, arises from the fact that virtually half of the school electors in the community do not have children in the public schools. And so, the big question shapes itself somewhat as follows: How can we interest *all* citizens in our schools, especially those who no longer have children in school and those who are nearing retirement age or have already retired?

First we need to know the causal factors of human interest in any service or commodity. Psychologists tell us that as individuals we are interested in things or activities because (1) they bring us pleasure, (2) give us security, (3) bring us satisfactions, or (4) meet basic needs.

We are willing to vote money for roads because we use them. We spend money for TV and the movies because they provide entertainment. We spend money for food and shelter because they meet our needs. And we pay taxes for firemen, policemen and health officers because they protect us.

Emotions Determine Attitudes

What, then, motivates a layman's interest in public education? The late Arthur B. Moehlman argued that if you give people the facts, they will act logically or reasonably. It's my opinion that *emotion*, even more than information, determines people's attitudes and behavior toward public education.

And these emotions and attitudes are mostly acquired in one's younger days, in fact, in the early character-formation days. That is why it is so important that we begin in the kindergarten and continue throughout all the grades to teach an appreciation of the public schools, and especially an understanding of why the outcomes of education are essential to our welfare.

It's quite obvious that many people judge their school taxes in terms of "what does the school do for me?" Just as soon as his children are through school, the taxpayer begins to think (as a neighbor said to me): "Well, I have paid my share. Let somebody else carry the load now." My neighbor had not learned, through discussion and experience and through indoctrination in his public school days, that his safety, welfare and well-being continue to depend upon public education, even though he no longer has members of his family in school.

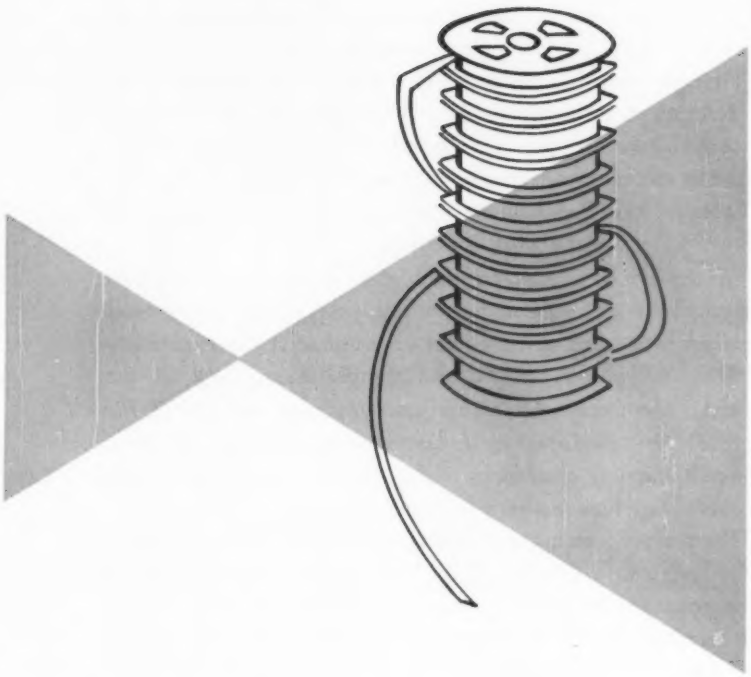
Part of our problem holds over from the fact that we "sold" schools for so long on the assumption that their function was to prepare us to be successful, to make money. Consequently people assumed that the usefulness of the schools ended when they themselves no longer attended classes.

Learning is a continuous process, and the need for the education of citizens is continuous. The desirable pattern of public education is one in which the school system also serves adults – at least as long as they continue to be voting citizens.

To the extent that it is possible for the public school system to serve the adult, either directly through instruction or through his use of the school plant, we are again sustaining his interest in education.

Our thesis is that schools will gain more support if they can find ways to touch the lives of grandpa and grandma.

The Editor



Administration Study No. 8

THE AUDIO-VISUAL Tools of Learning

THE revolution in communications has reached the classroom. Education now has the tools for accelerated and enhanced learning. Experiments demonstrate the effective instructional use of television, films, magnetic recordings, teaching machines, and other devices. Here is a special study for the administrator on facilities, technics, policies and research related to audio-visual media.

A PICTURE OF WHERE WE ARE

Wittich

WITH the enactment of the National Defense Education Act, 1½ million school administrators and teachers find themselves a part of the nation's defense establishment.

The very nature of titles within this act make mandatory the close scrutiny of the methods being currently employed in educating youth to take its place in a space-atomic age. This age is complicated by emerging current social changes among the Congolese, the Laotians, the Red Chinese, Indians and by tomorrow's yet unknown others of the world's peoples.

All this implies a need for the highest degree of scrutiny into the means by which information is presented to and understood by learners who need, as never before, to understand realistically the world of people, places and things. As implied in the N.D.E.A., *there must be further understanding and use of the new media — television, films, language labs, programed texts, automated teaching machinery, and so forth — as the means for improving classroom learning and understanding.*

For years a growing and dangerous lag has occurred between the methods used to communicate ideas in the classroom and the means employed in general society. Classroom teaching has become increasingly remiss in the employment of the learning opportunities possible through motion pictures, educational television, and automated teaching devices, to say nothing of filmstrips, models, charts, maps, globes and the like.

Today, teaching and learning in our contemporary classrooms must be reexamined in the objective way in which administrators have learned to tackle other problems — through *research* and through *action* on the basis of research.

This 48 page administrative study of the new media is presented in a similar manner and includes: (1) A vivid picture of the A-V tools of instruction that the industry has provided, and promises of things to come. (2) An authoritative appraisal of the language lab. (3) Significant facts about the teaching machine and programed instructional materials. (4) The verdict of a score of outstanding school administrators concerning the practical values of television in the classroom. (5) Emphasis upon the growing importance of local production. (6) A review and analysis of research made possible by the N.D.E.A. (7) The fascinating story of pioneer audio-visual research by Thomas A. Edison. (8) Proposals for schoolhouse design to facilitate use of the new media. (9) The administrator's responsibility for effective utilization of A-V technics and facilities.

In brief, what follows is a *stop-action* picture of where we are in this second year of the N.D.E.A.

WALTER A. WITTICH, professor of education, University of Wisconsin, and audio-visual consultant, The Nation's Schools.

Tools of Learning

The 'cross-media approach' improves instruction by use of A-V devices. Here's how these aids are being developed and improved by industry

DON WHITE

Executive Vice President
National Audio-Visual Association, Inc.

TODAY'S school child spends a sizable part of his out-of-school hours in a world of powerful communications. Television, comic books, phonographs, radio and movies vie with one another for ways to excite his interest and enthusiasm. To a considerable extent the teacher in the classroom has had to compete with these powerful media for his attention and interest. It is a tribute to teachers that in the face of this competition and with inadequate tools, they have done as good a job as they have of educating our children. For until recently it was true that the American teacher was the only professional person still trying to work with yesterday's tools.

Today, however, the communications revolution of the last 50 years has begun to make itself strongly felt in the classroom. Films, language recordings, broadcast and closed-circuit TV, filmstrips, slides and transparencies are developing as fundamental tools of the teacher. No longer are they regarded as "nonessentials . . . in the same class as swimming pools," as they were characterized at the White House Conference on Education only five years ago. No longer does an audio-visual program consist of a weekly film showing in the auditorium for the entire student body. Teachers are realizing that audio-visual devices offer them a wide range of tools, each suitable for particular uses, and each contributing its part to make a real improvement in the teaching process.

It is this "symphony" of audio-visual instruments or – to put it in better educational terminology – the "cross-media approach" which is developing as a significant trend in the improvement of instruction. There are roughly a dozen major types of audio-visual devices currently being offered to schools, each of which has its particular advantages. Like a skilled carpenter, the teacher can select the tool that will shape the result he desires, or he can use several different tools to build an effective lesson.

Only recently did many of these tools develop into technically acceptable and usable devices. The **opaque projector,** for example, directly projects anything from a postage stamp to a magazine page. Within the last 10 years the light output of the opaque projector has been increased nearly four times, while the size of the copy capable of being projected has increased nearly threefold. From the teacher's standpoint, this means that more than 90 per cent of all printed or written materials can be projected by means of this device, and that instead of requiring a blacked-out room for projection, the modern opaque projector requires only subdued room light and can be used satisfactorily in a room with ample light for note-taking. For the administrator it means economical yet first-rate visual materials for every class.

Overhead projectors, likewise, have evolved into highly effective teaching tools whose unique advantages, previously demonstrated in industry and government, are now being applied in our schools. These projectors, which show large transparencies, can be operated by the teacher at the front of the room; the visual and oral elements of the lesson are correlated. The teacher faces the students, and he can watch their reactions since the projector operates effectively in a lighted room. Transparencies are inexpensive and easy to make locally; the teacher can assemble his own sets and keep them on file for future use, and make additions and refinements each year.

The overhead projector of a decade ago had its limitations. It was heavy and costly because of its optical system, which delivered only 100 lumens of light output.

(*Continued on Next Page*)

Projectors now are efficient under adverse lighting conditions. High fidelity is a reality, while ETV, language labs, and teaching machines are bringing the communications revolution into the classroom

Adaptation of modern lenses made it possible to increase the maximum aperture size from 4 by 5 inches to 7 by 7 inches and then to 10 by 10 inches. (The smaller sizes, it should be noted, are still very much in demand and are better for certain uses than the larger units.) Lamp wattage, originally 500 watts, has doubled, but light output has been increased from the original 100 lumens to today's 2400 lumens. A modern overhead projector will project a usable picture under virtually all light conditions except direct sunlight.

The 2 by 2 inch slide projectors are another example of the spectacularly improved audio-visual tools which have become available within recent years. New automatic projectors permit slides to be shown in sequence by remote or automatic control. Because of the wide sale of slide projectors in the home market, these automatic units are available at extremely low cost. Slides may be synchronized with voice and music, and even the focus is automatic on some makes. Inexpensive 35mm. **cameras,** particularly those with electric eye exposure control, make it easy for teachers to prepare slides in full color.

Ten years ago, **filmstrip** sales to schools in the United States were negligible. Without any great fanfare, filmstrip sales have doubled and redoubled in that period until they are standard teaching tools today. The development of **filmstrip projectors,** which are simpler, easier to use, and less expensive, has contributed greatly to the increased use of filmstrips. Fifteen years ago, 300 watt filmstrip projectors, which in operation literally got "hot enough to fry eggs on," were the norm. Today's 500 watt projectors run at comfortable temperatures and, because of advanced optical design, deliver several times the screen illumination of their forebears. And projectors of 750 watt and 1000 watt capacity give proportionately higher screen brightnesses.

The sound filmstrip projector, too, has become a versatile and accepted teaching tool. Modern electronics has eliminated the "bong" formerly necessary to signal for the frame change; now, a combination of 30 cycle and 50 cycle signals recorded in the sound, but not audible, signals this unit to change frames. Completely automatic, transistorized projectors with built-in screens, a relatively recent development, will present an audio-visual program at the push of a button. There are no adjustments to make, and there is no focusing or threading – just plug in the projector, push a button, and the program starts.

Improvements in **16mm. sound projectors,** while perhaps less spectacular than those of other audio-visual devices, nonetheless are being made continually. Recent technical advances include carbide or sapphire-tipped pull-down claws and specially hardened film handling parts for long life; shutters which change from 2 blade to 3 blade in switching from silent to sound speed, giv-

ing maximum light output at either speed; permanent lubrication; transistor photocells; printed circuit amplifiers, and push-button, simplified controls. Simpler threading is now being featured; one new projector, shortly to be announced, will have "drop-in" threading for a sizable part of the film path.

Magnetic sound projectors, introduced during the last decade, make it possible for the teacher to produce his own sound motion pictures or to add a special sound track, such as a foreign language track, in order to tailor a particular film to special needs.

A recent and significant technical advance leading to the improvement of several types of equipment is the **projector lamp** using the "proximity reflector" principle. It uses built-in dichroic reflectors, focused with extreme accuracy by the manufacturer, which reflect visible light forward but let infrared (heat) rays transmit through the reflector and out the back of the lamp. It offers greater illumination, longer lamp life, and in some cases, lower initial purchasing and replacement cost. The manufacturer of one new 16mm. sound projector, shortly to reach the market, states that a 250 watt, 21 volt lamp of this type in his new unit will give a light output equal to that of a 1200 watt lamp of conventional design.

Today's optical designs in projection equipment are far ahead of those of a decade ago. One interesting new optical development is **"zoom" lenses,** which make it possible to enlarge or reduce the picture size to fit the screen without moving the projector. (See pages 68-69 for discussion on teaching films.)

Among the invisible advances in audio-visual equipment are the great improvements that have been made in **A-V electronics.** High fidelity is now an accepted standard in classroom devices. Transistorized, printed-circuit, plug-in amplifiers, now being used in some types of audio-visual equipment, are a sign of things to come. When troubles develop the entire amplifier can be unplugged and a replacement unit substituted within a few moments, eliminating "down time" on the equipment while electronic repairs are being made.

But equipment will always require servicing. The audio-visual industry has faced up to this problem by establishing a nationwide network of specialized dealers who provide electronic and mechanical service, who stock spare parts and needed supplies, and whose experienced, factory-trained technicians can literally rebuild A-V equipment "from the ground up." Increasingly, experienced educators are making it a policy to buy their equipment from the dealer who will assume the responsibility of servicing it. Since the best of equipment is of no value when it fails to work, this intelligent purchasing policy deserves the serious consideration of every school administrator.

Television, language laboratories, and teaching machines are some of our newer devices of great promise. Ten years ago, educational television was little more than a dream in the minds of forward-looking educators. Now it is an everyday teaching tool. (See pages 80-82.)

Only three years ago one could count on the fingers of one hand the **language laboratories** in secondary schools in this country. A whole new way of teaching languages has been developed by language teachers, in cooperation with equipment manufacturers, and thousands of language laboratories are now in use, with thousands more on the way. Use of the "learning laboratory" technic is spreading to other parts of the curriculum; individual participation by the student, plus the repetitive approach, has many advantages, some as yet unexplored, in other subject areas.

And now, new on the educational scene, and heading our way at increasing speed, is the **teaching machine.** Here is a tool of tremendous value for individual instruction. But a word of caution is appropriate. Teaching machine manufacturers and experts are urging that adequate time be allowed for an experimental period before teaching machines and the accompanying materials are rushed into production. (See pages 70-73).

To some extent, language laboratories suffered from being rushed into volume production, and sales were made before manufacturers were completely ready with finished and tested designs, and before materials were available for use in the laboratories. This same thing can happen to teaching machines — but its effects can be worse. Right now, for example, there are no technical standards for the production of materials for use in teaching machines — a situation analogous to the early days of films when 9½mm., 8mm., 16mm., 32mm., and other widths contributed to a general confusion. At present, materials prepared to fit one make of machine may be used on that make only. Much research and experimentation remains to be done on machine functions, machine designs, and materials design. Certainly schools should and must participate in this experimentation, but those who buy teaching machines and materials at this point should recognize fully that they are still in the experimental stage.

The first half of the Twentieth Century spawned a communications revolution which is extending into the classroom and which promises great improvements in our instructional processes. The next decade will see more materials of every type, more readily available, on every subject in the curriculum. Equipment will be simpler to operate, easier to transport, and designed for easier maintenance. New items of equipment, some not yet conceived, some now on the drawing boards, will become reality and will make their contributions.

For educators, the next decade should be an exciting time. The audio-visual industry, continuing a relationship which has developed over many years, will be proud to do its part toward the development of better instruction and better schools. ■

Teaching films have settled into 'proper perspective.' The trend is toward courses and 'packages.' Improvement in quality of content has resulted from professional production

A SURVEY, reported by Leo E. Buehring

FILMS and filmstrips "came of age" during the Fifties, and especially during the last five years. The greater "maturity" in this segment of audio-visual media has resulted from, as one representative of the industry expresses it, "its settling into proper perspective from the educator's point of view, becoming an essential part of the whole system of instructional materials." It has manifested itself in the marked trend to produce filmed "packages" as well as courses, as distinguished from individual films.

The single miscellaneous film still is important as a supplement to specific teaching materials and as an introductory device in schools with limited A-V facilities, particularly at the elementary level. However, major production efforts today center on related units or "packages." For example, one producer is completing 87 films in elementary science, developed under the direction of committees of specialists in this area; each film is designed to relate to the preceding films and those following it. This "package" embraces all key concepts in general science in a set of films for pupils from the third grade through junior high school.

Filmed *courses*, too, are gaining in number. These are a series of "lessons" that are "locked together" as parts of one continuing presentation for teaching a given subject over a stipulated period of time.

These observations are based upon interviews with key persons in the film making industry.

The teaching film business today is big business. No longer can the superintendent think in terms of a "throw away" budget for "film showings." The cost of one 16mm. sound film *set* now ranges from $2500 to more than $25,000 (in color). Under the impetus of federal funds made available under the National Defense Education Act, film and filmstrip libraries have been growing at an astounding pace.

Whereas the normal rate of growth in classroom motion pictures was about 10 per cent a year following World War II, this increase has been accelerated in the last two years to an annual average of at least 25 per cent. According to one source, there are 250 concerns producing films today; of this number, possibly 160 concerns are designing film for classroom use.

A major change in the role of the "audio-visual director" has occurred in the face of the stepped up utilization of classroom film. Gone are the days when the erstwhile athletic coach, turned "director of audio-visual education," was the staff member who produced the material and/or made sure that his superintendent included in the annual budget from $50 to several hundred dollars for the rental of incidental film. Today, teaching films are an ongoing and intrinsic part of the curriculum; they are planned and produced by specialists to meet specific needs.

Major teaching film producers have research staffs that examine hundreds of film ideas received from school administrators, supervisors, teachers and others in the field. Potentials are explored, and possibly a third of the suggestions is given further consideration. The producers also have permanent staff script writers who follow up the extensive research. Camera crews work on virtually every continent and shoot pictures according to the scripts meticulously prepared by the producer.

Audio-visual directors increasingly are being assigned to distributing tasks, to handling tasks, and to selecting individual films for supplementary use. They also are being given the responsibility of directing the inservice training of teachers in the use of modern A-V media.

The evaluation and selection of classroom films more and more have become the functions of the curriculum director and the heads of subject matter departments. The superintendent looks to his top level associates for recommendations. As a result, he personally has become deeply involved in making primary decisions regarding film utilization and purchases.

Two major areas of concern continue to occupy the administrator's attention: (1) making an adequate supply of helpful films readily available to the classroom teacher, and (2) training the teacher to make full and intelligent use of films that are available.

The problem of ready access to films remains. Even though film resources in many school systems today are of considerable size, few teachers have the films they want when they want them. Thus the superintendent's big problem may be to find ways to provide teachers with these resources so they can be used less casually and, thus, more effectively.

Untrained teachers are a continuing second problem. Wide acceptance and availability of high quality film

does not necessarily mean maximum utilization. The A-V industry in general, and especially the producers of films, continues to devote an important share of time and effort to helping schools achieve better use of such materials.

Many superintendents now believe that technical competence in using and evaluating modern visual materials is a must; a teacher who cannot operate a film and filmstrip projector, or select and teach with suitable films, is as poorly equipped for his teaching license as a taxi driver who cannot drive. We were told that only two states, California and Indiana, require course work in audio-visual media for certification. Pennsylvania strongly recommends it. Elsewhere professional training in this area, if available, is offered on an elective basis.

One spokesman of the industry declared that out of more than 600 institutions offering teacher education courses, only about 25 per cent provide instruction in the audio-visual field. As a result, the majority of teachers being graduated today has had no contact with film utilization during the training program. Admittedly, inadequate skills on the part of teachers limit the most effective use of modern teaching films. Films themselves may prove to be the most practical facilities for training teachers; they can serve as an effective device to increase the competencies of teachers while being shown to students.

A major effort made nationally to train teachers without previous experience with films and other audio-visual media was initiated by the University of Wisconsin with the aid of funds from the U.S. Office of Education. The films have been televised in a half a dozen midwestern states and in Florida.

Summer workshops in this area also are being set up to provide intensive refresher courses.

There has been a change in film content. The original narrative, exposition type film gradually was refined by adding color, music and lip synchronization.

The advent of Hollywood type costume productions brought a tremendous advance in the format and design of the 16mm. film. They made the pages of history come alive in meaningful form, and they gave life to the dates and facts learned in the textbooks. Then came improved print production technics, which made films in the biological sciences more effective.

Next came foreign language sound track films, which were the forerunners of the filmed courses subsequently made available. The humanities also have been explored, with the pages of great dramatic literature coming alive in this series.

Also, during the last decade came filmstrip format and design — short strips, with 10 frames and 12 frames used for the development of topics in science and other learning at the primary level. Introduced with the short strips was individual viewing. A combination book, filmstrip and record presentation was another development.

It is natural that during the last several years more films should have been produced in science and mathematics; however, there seems to be a swing back to films in the fields of the humanities, literature, art, music and guidance.

Elementary school films have increased. While initial films were produced largely for the high school market, there has been a gradual increase in the production of films for the elementary level, so that today they probably outnumber the others two to one.

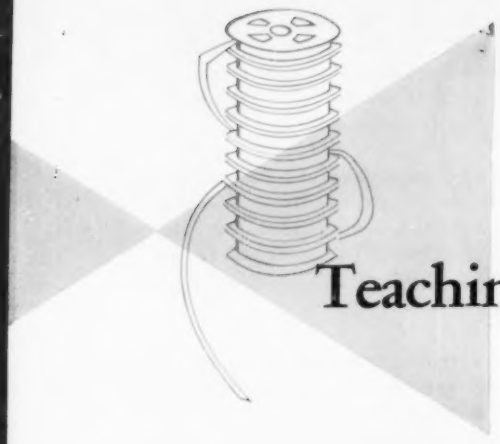
There has been a trend from individual films to sets. Earlier sets dealt with physics and chemistry. A portion of a course in the humanities was released last year. Ready soon, according to several representatives of the industry, will be courses in biology and probably American history.

Films and textbooks are bing correlated. One teaching film producer reports spending $25,000 in one year to correlate all its films to all major textbooks used in the United States. Literature indicating how the films tie into the different publications has been prepared and is being supplied without charge to school systems.

New on the scene is the 8mm. film. There has been marked progress in the development of the 16mm. sound motion picture instructional film during the last decade. More recently, millions of dollars have been spent in research on 8mm. film. It is asserted that the smaller cost of the 8mm. film would make possible a projector in every classroom. Thus far, however, *production* costs for the two sizes of films are approximately the same.

School systems as yet have not taken full advantage of the benefits of N.D.E.A. Money from this source, it is reported, has been spent largely for modernizing laboratories and for purchasing laboratory and other scientific and language instruction equipment. With the considerable progress that has been made in this area, the industry spokesmen believe that more of these federal funds from now on will be allocated for school owned films. One representative stresses that administrators can hardly afford to omit such items from their budgets. In the first place, he says, school films are priced after a markup considerably lower than for industry in general. The quoted figure then is cut in half by the matching N.D.E.A. funds (if the subject deals with science, mathematics or a foreign language). State appropriations in some localities also are available. Thus, in some instances, the net cost to the school of a set of instructional films may be as low as one-fourth the figure at which an industrial concern would be billed for an equivalent type of presentation.

A-V supervision is a continuing job. The rapid growth of new knowledge and changing world conditions make it necessary that school administrators review film resources frequently. Today, few continents remain as depicted in geography texts, atlases, or geography films produced more than a decade ago. There is a steady flow of new materials on nations like Indonesia, Iran, the Congo, Israel — all of these are now radically different from the way they have been pictured in traditional materials. Superintendents will provide resources to upgrade and update films and filmstrip libraries with these considerations in mind. ■



Teaching Machines

Auto-instruction devices provide the individual student with a program of materials to be learned. They can free teachers from drudgery

ROBERT C. SNIDER

THE present great interest in teaching machines and programed instruction is symbolic of at least three major forces acting on the schools of this country – a trilogy of dramas now playing or about to be played on the vast stage of American education.

The first and most obvious force is the great public interest in improving the schools. Viewed in another way, this force can be seen as a general dissatisfaction with the present state of American education. In this climate of concern over our schools the idea of a "teaching machine" has generated much interest.

A second major force confronting the schools and creating much interest in "machine solutions" to educational problems is our rapidly developing technological society. In the United States since World War II a very high level of technology has been reached in nearly every area of human activity – with the possible exception of the schools and the railroads. A vast technological society with its data processing devices, its information retrieval systems, and its automated factories can be expected not only to look with favor on the development of teaching machines but also to provide dramatic leadership for their development and acceptance in the schools. This is happening.

Behind these two relatively obvious forces is a third more awesome force – the pressure of our projections into the future. We know, for example, what is happening to our population and the seemingly impossible problems this alone will pose for the schools in a few short years. Add to this the ever increasing need for education in a society that is rapidly eliminating its market for unskilled workers. Add to this the obvious fact that the sum of human knowledge (the stuff of our curriculum) is increasing at an ever increasing rate – some authorities tell us this sum will soon begin to double in something less than every decade. Add to this the acceleration of change itself in the decade ahead – already, the Department of Labor tells us, a skilled worker must expect to learn three completely new sets of job skills during his productive life. Add to this the disturbing fact that today nearly 15 per cent of our young people are alienated by the schools and drop out as soon as the law or their parents will permit.

When these three forces are considered with only some of their dramatic implications for the future of education, there is small wonder that the idea of a "teaching machine" is attracting wide interest in America today.

One focal point of this interest in teaching machines is the Department of Audio-Visual Instruction of the National Education Association. Historically, this department with its 5000 members has attracted the educational innovator, the person who has been concerned with adapting technological developments to the teaching-learning process. With its military and its industrial sections, the department traditionally has been alert to new developments in learning theory and instructional technology. During the last few years it has become a major source of information on teaching machines through national conventions, regional workshops, and publications.

However, it should be noted that the department has taken no "official" position on the so-called teaching machine movement *per se*. The information program is an effort to provide our members and others with the background material necessary for further experimentation and research in this promising area.

Some Terms Defined. Let us first agree on some basic terminology and then proceed to some typical questions.

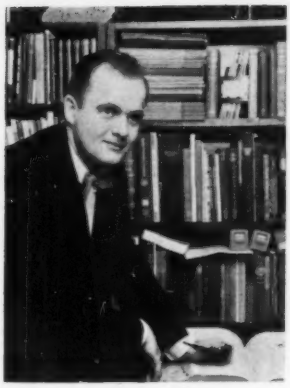
TEACHING MACHINES. With all its unfortunate connotations, this term is in wide use, despite the fact that

"auto-instruction" is a more accurate term and one that is apt to meet with less *semantic* opposition. Teaching machines have certain characteristics that distinguish them from more traditional audio-visual equipment. They are designed for the individual student rather than for mass instruction of an entire class at one time, *e.g.* one machine and one student. Basically the machine is a device for presenting to the individual student a *program* of material to be learned. The machine requires active response from the student who must manipulate it in some manner to indicate his response to a question or problem presented by the machine. All teaching machines immediately confirm the student's response by indicating in some manner if the answer is correct.

PROGRAMED TEXTBOOK. Closely related to teaching machines are programed textbooks which look like any textbook externally but which are quite different in make-up. The programed text presents in proper sequence the discrete steps, or questions, that make up the *program*. Answers to these questions appear in the book on subsequent pages. Although the programed text has much in common with the machine, it does not prevent the student from looking at the answer prior to answering the question, nor does it control other aspects of student behavior – activities that can be prevented or taken into account with machines. According to some studies this type of "cheating" appears to have little effect on learning, especially at more advanced educational levels.

PROGRAMED INSTRUCTION. The teaching efficiency of any auto-instructional device will depend largely on the subject matter program that has been prepared for use in it. The development of technics for the preparation of programed material is an important research endeavor going on at the present time. Consideration also is being given to establishing standards, since today programs

PREVERBAL machine is activated when child presses frame. The child learns by matching easily recognized pictures or symbols. This learning anticipates the later use of words.



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often are produced in a form that cannot be used in all existing machines.

Preparing subject matter as program material for auto-instructional devices calls for special skills, since it requires that the material to be learned be divided into small, discrete units of information, which in turn must be arranged in a sequence that facilitates learning. As a program is developed, it is necessary to test each sequence with students of the appropriate age and developmental level. Appropriate changes are then made in the program as a result of student responses and the process is repeated. *This detailed revision of a program on the basis of an analysis of student behavior is a major emphasis in the concept of programed instruction.* At the present time it appears that the preparation of an adequate program for a given course of instruction is a specialized and expensive process.

Programed material is not now being produced in sufficient quantities to meet the teaching potential of machines now on the market. Because of the time and cost involved in producing adequate programs, there is the ever present danger that programs of poor quality will be used and thus will bias research results in this promising field. However, several major textbook publishers are currently giving attention to this problem, and the present shortage of programed material will be somewhat lessened in the near future.

Will teaching machines replace teachers? In the late Nineteenth Century Thomas Edison expressed the conviction that his motion picture projector would do away with the need for teachers, and sometime before then similar sentiments were expressed for the printed book. To date nothing has replaced the skilled teacher, and when we seriously consider the present goals of education, the likelihood of a completely automated educational system seems foolhardy.

It does seem reasonable to predict that the role of the classroom teacher will change as more and more technological devices find acceptance in the classroom. As for the pupil, he can expect a larger measure of individual attention — some of it from electronic tutors — but more importantly from teachers who, being freed from the drudgery of endlessly imparting information, will have the time to devote themselves more fully to the humanistic aspects of teaching.

Where can one get more information on teaching machines? The most comprehensive work in print is the 736 page "Teaching Machines and Programmed Learning: A Source Book," edited by A. A. Lumsdaine and Robert Glaser and published late in 1960 by the Department of Audio-Visual Instruction of the N.E.A. This volume brings together the major papers published since 1926 and contains a large collection of research abstracts as well as a comprehensive bibliography.

Teaching Machines: An Annotated Bibliography by Edward B. Fry and others was published a year ago as an 80 page supplement to the D.A.V.I. journal, *A-V Communication Review*. This publication contains more than 120 annotations and a listing of the names and addresses of teaching machine manufacturers, plus detailed descriptions of some 28 experimental automated instructional devices. Available on request from the D.A.V.I. Washington office is a brief current annotated bibliography on teaching machines.

What should our school be doing about teaching machines now? After finding out what has already been done with these devices, the administrator and his staff may want to embark on an experimental program of their own. This need not be expensive if they make use of commercially available programed texts, or limit the work to only a few machines using available programs. Costs will skyrocket if the school attempts to do its own programing. At present, most authorities agree that the use of teaching machines in schools should be done only on an experimental basis.

What subjects lend themselves best to programing for teaching machines? In theory any subject that can be verbalized can be programed and right now a pro-

Photo by Carl Purcell, National Education Association

TYPES of auto-instructional devices are examined by A. A. Lumsdaine, professor of education, U.C.L.A. (left, above) and Robert Glaser, professor of psychology, University of Pittsburgh. Device at left, activated by pushbutton, presents program units on cards. The other machine provides area for constructed response. Dr. Glaser holds programed textbook.

SELECTION of images on machine (below) depends on trainee's reasoned choice. Printing recorder (top of cabinet) records answer and time taken to choose.

gramed course in creative writing is being developed. From a more practical point of view such subjects as arithmetic, mathematics, and the sciences are more easily programed since they must be taught in a readily identified sequence. Consequently most programs now available are in these subject areas.

At what grade level are teaching machines most effective? There is not enough evidence at the present time to answer this question. Thus far most of the research and programing has been limited to college and adult levels. It is becoming increasingly obvious that once a subject has been properly programed it can be taught successfully at a lower age level. Also, some promising research has been done with pre-verbal machines.

Will teaching machines or programed textbooks dominate the future of auto-instruction in the schools? Again the question is premature, but it now seems that this is not an "either-or" consideration because both methods of presenting programed instruction have unique advantages and disadvantages. The programed books are relatively inexpensive and in some cases can be reused, although they sacrifice some control over student behavior and provide a relatively meager record of responses to the program. Since many machine programs can be reused almost indefinitely, a case can be made for some machines on a cost basis alone although they do have other unique advantages. It now seems likely that "compromise machines," simple and inexpensive, will be available soon for further experimentation.

What effect, if any, will the current interest in auto-instruction have on the traditional textbook? Probably a great deal, if one can judge from the present interest of textbook publishers in auto-instruction. The president of a large textbook house recently commented that the machine has focused attention on the same sort of precision and reinforcement in independent learning that the self-teaching workbooks and textbooks have long been attempting with varying degrees of success. ■

Programed Materials

'Psychological sequencing' is the essense of programing instructional materials. Independent learning through self-instruction results

P. KENNETH KOMOSKI

THE WORDS "teaching machine" – broadly taken – may be applied to everything from a film projector, a TV set, or a tape recorder to the type of device developed in the psychological laboratories at Harvard University four years ago by B. F. Skinner. Precisely speaking, none of these devices, not even those variations of Skinner's design that are now known as teaching machines, actually has the ability to teach anything. However, they all have the potential of presenting instructional material to students without the presence of a teacher.

In this respect, these machines are analogous to another device commonly used for presenting instructional material – the book. Books have been used for centuries as a means of self-instruction. A book's success or failure largely depends on its subject matter, the approach taken to the subject matter, and the clarity of its presentation. Other factors, of course, also might be considered. The *least* important of these factors is the book's cover and binding. No one, least of all educators, needs to be warned "not to judge a book by its cover." Yet today, many people, including a good many educators, seem to be making the mistake of judging a possible revolution in self-instructional materials by the kind of cover and binding being used to present them, not by the nature and quality of the materials themselves. For proof of this, consider that while teaching machines have attracted great attention in recent months, the "programed" materials, which the machines are designed to bind together and cover, have been emphasized little by either educators or the companies engaged in the manufacture of these "ultra-modern book covers."

Therefore, it is extremely important that educators recognize that these devices – no matter how cleverly designed – have no magical properties, and that the efficiency and effectiveness of programed instruction have little to do with hardware, mechanics, or electronics. It must be recognized that the hard work, talent and knowledge that go into writing programs of instruction must have priority over machines in the minds of educators.

Furthermore, in order to understand programed instruction and its implications for education, educators should become acquainted thoroughly with the principles that have been developed by psychologists during the last 30 years and incorporated into the technics of programing.

Programing is not an esoteric art. A good teacher often can become a good programer. However, a certain amount of specialized training is necessary. The principles of programing, as set down by psychologists, are deceptively simple. The difficulty comes when these principles must be put into *practice*. The task of programing is not, as many people seem to believe, simply the task of analyzing or breaking down subject matter into minute steps and arranging these steps in a logical sequence. If this were the case, programing would be little different from building a syllabus complete with a detailed plan of each lesson.

Programing changes behavior. Programing, however, does not have as much to do with logical sequencing as with "psychological sequencing." That is, the steps in a program are arranged to effect a change in the behavior of the learner. A program doesn't *show* a student how to do something; it *makes the doing of it* a thoroughly integrated part of what he "knows." This type of learning can result from a program because the learner must respond actively to each one of the carefully arranged steps before he goes on to the next. This activity is guaranteed in a good program because the student answers questions that call forth the behavior that he must "know" if he is going to learn what-

ever the programer has set out to teach him, such as spelling correctly, understanding mathematics, understanding a poem, and so forth. The programer also must arrange ways to "reinforce" the student when the student has begun to learn; it is only by being "reinforced" that what has been learned will become part of what the student can *do* in the future.

Perhaps the amount of talent, imagination, education and training required of a programer explains why there are at present so few good programers and programs. The task of transmitting the technics of programing is difficult and crucial.

Competency of programers is major concern. The future of programed instruction and the future of teaching machines depends on who is trained as a programer and *how*. This is the task that now faces education. If we succeed in meeting it, the gains for education can be great; for with good programs the possibility of independent learning through self-instruction may become a reality for all students. If such a revolution – and it would *be* a revolution – comes about, it will be because educators have realized fully that *the quality of the people we invest in programing is infinitely more important than the quantity of money we invest in machines.*

Education today is faced with an unprecedented problem of numbers. However, we must not let this quantitative problem cause us to lose sight of the fact that our response must be first and foremost a concern for quality. If we could put a multitude of high quality self-instructional programed materials into the hands of our teachers, we could increase the effectiveness of these people to such degree that we might begin to find our way around the quantity-quality dilemma that plagues most school administrators today. The mistake we must not make is to think that merely by buying teaching machines, or TV sets, we can fulfill our commitment to make high quality education available to all persons. We must recognize that the key to such education in the modern world is a panoply of instructional materials that may be used by teachers with imagination and confidence.

Programed instruction will not replace teachers. Machines cannot replace teachers any more than books replaced them. But, as books changed the teacher's role from drill master to educator, stimulator and clarifier, programed instruction can make it possible for a teacher to have to clarify less and stimulate and educate more. Most important, it will enable teachers to meet the needs of the individual learner in both small group and tutorial situations. The teacher doesn't have to review or re-explain the contents of a good program; instead, the teacher will be able to "take off from" and "add to" what the student has learned on his own. The teacher then will be able to help the student enlarge on, relate and use what he has learned, to help him solve, seek and state new problems, and to express himself as often in the form of intelligent, well phrased questions as in the form of thoughtful, well composed answers. Thus, the teacher must do the job of educating – the job that remains to be done if the seeds of instruction are not only to grow, but to flourish.

The analogy made between teaching machines and books is not purely figurative. And all educators should be aware of the fact that virtually all of the currently available teaching machines can be and have been simulated by programs presented in a type of book known as a *programed text*. In these texts the item-by-item programed subject matter is printed so that the student can read each item in proper sequence and respond and check each response against the correct answer before going on to the next item. In the future, it may become less expensive to photograph these programed books and present them with machines via microfilm. This, however, is a problem for the engineer, not the educator. As educators, we must learn how to improve and refine our programing technics, and we must introduce programed instruction into schools via the most flexible and least expensive method now available – by using programed texts.*

Because of the preciseness with which programs can be evaluated, it is hoped that programing technics will be constantly sharpened. Also, it is likely that these technics will be transmitted to talented teachers and to curriculum and subject matter experts – the people who will become the real makers of the hoped-for revolution in instructional materials. ■

*It should be emphasized that certain programs now being developed cannot be presented in book form — programs that call for a synchronized picture and sound will require another type of device if they are to be effective.

P. KENNETH KOMOSKI . . . president, Center for Programed Instruction, New York City, since its incorporation in December 1960 . . . formerly director of Collegiate School Automated Teaching Project. . . . The Center conducts research, creates programs, and assists schools in New York City and elsewhere in studies of classroom uses of programed instruction. . . . Since 1952, Mr. Komoski has been a teacher and administrator at Collegiate School, New York. . . . Previously he was a member of the faculty at Morristown School, Morristown, N. J., 1950-52, where he also attended school. . . . He is vice president of the United States Professional Lawn Tennis Association.

Greatly accelerated learning of algebra through use of programed materials is demonstrated in Roanoke, Va. Method is favored by most teachers and students; holds promise of improving instruction in many subjects on all levels

E. W. RUSHTON

Editor's Note: Testing of materials in mathematics is being conducted simultaneously in Roanoke, Va.; San Francisco; the Denver area; Chicago suburbs, and Long Island, N.Y. The entire project is financed and sponsored by Encyclopaedia Britannica Films, Inc. Approximately 5000 school children are involved in the five testing projects. Each test is under the direction of an experimental psychologist who has formed his own experimental design and is expected to report his findings independently.

IN ROANOKE, VA., a city of 100,000 people nestled in the Shenandoah Valley between the Blue Ridge and Appalachian mountains, an educational movement is under way which should provide a major break-through in the use of programed instructional materials by high school pupils.

This venture in education was initiated in January 1960, when Allen D. Calvin, associate professor of psychology at Hollins College, invited Roanoke school officials to cooperate in a demonstration to obtain a preliminary assessment of automated teaching of mathematics. Upon the recommendation of the superintendent and the approval of the school board, a demonstration class of 34 eighth grade pupils was formed. They represented a cross section of the eighth grade school population.

Deyerle Studios

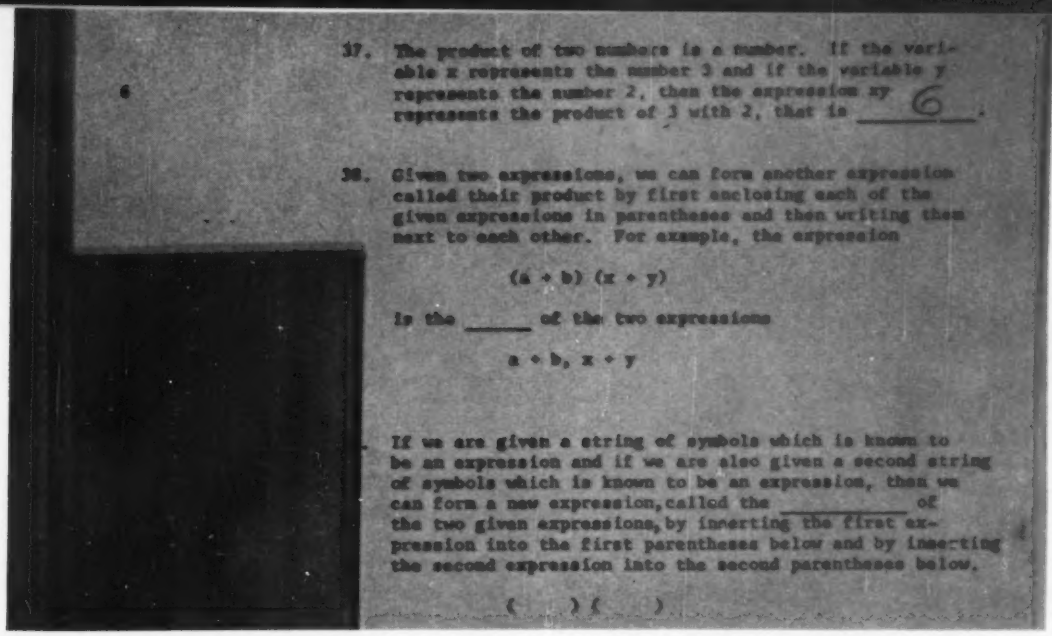
E. W. RUSHTON . . . superintendent, Roanoke, Va., since 1953 . . . assistant superintendent, Roanoke, 1952-53 . . . superintendent, Orangeburg, S.C., 1946-52 . . . state director of 12 year school program, South Carolina Department of Education, 1944-46 . . . South Carolina high school supervisor, 1942-46 . . . principal and superintendent, South Carolina schools from 1926 . . . former president, South Carolina Education Association . . . former president, South Carolina Association of School Administrators.

The subject material used was the first year high school algebra, normally taught in the ninth grade. Eighth grade pupils were chosen to allow for the eventuality that the teaching machine would not be an effective instrument. The pupils would have been able to take algebra in the normal ninth grade sequence and therefore would not have been handicapped by their participation in the demonstration class.

The material was programed by a former high school mathematics teacher who was enrolled in the graduate program of psychology at Hollins College, located seven miles from Roanoke. There was no preliminary testing of the material because of the pressure to keep up with the demonstration class.

For the purpose of this demonstration the teacher was not allowed to assist pupils in any way. In this way the effectiveness of the program material used in the teaching machines could be evaluated.

Learned without teacher or homework. These 34 pupils were taught without the help of teacher, textbook or homework – the only source of their knowledge of algebra was the material in the teaching machine. They were able to cover an entire year of ninth grade algebra in approximately one semester. The pupils were given the Lankton first year algebra tests at the end of the semester. The average score of these eighth grade pupils fell in the lower bracket of the average for ninth graders, with 41 per cent of them surpassing the average score for ninth graders on the national examination. Only one



17. The product of two numbers is a number. If the variable x represents the number 3 and if the variable y represents the number 2, then the expression xy represents the product of 3 with 2, that is 6.

6

18. Given two expressions, we can form another expression called their product by first enclosing each of the given expressions in parentheses and then writing them next to each other. For example, the expression

$$(a + b)(x + y)$$

is the _____ of the two expressions

$$a + b,\ x + y$$

If we are given a string of symbols which is known to be an expression and if we are also given a second string of symbols which is known to be an expression, then we can form a new expression, called the _____ of the two given expressions, by inserting the first expression into the first parentheses below and by inserting the second expression into the second parentheses below.

( )( )

SAMPLE of copy in a programed textbook used for teaching ninth grade algebra to eighth grade pupils.

These materials have been prepared for use in connection with testing programs approved by Encyclopaedia Britannica Films, Inc., and are subject to revision. They may not be re-used or reproduced without the express consent of E.B.F., Inc.

eighth grader fell in the very low category for ninth graders.

Pupils then were asked to react to this kind of teaching. Their responses to a questionnaire revealed that 25 per cent of them preferred the teaching machine only; 69 per cent the machine plus the teacher, and only 6 per cent the conventional classroom situation.

This demonstration made a strong impact in Roanoke. We hold no brief that we have the answers, but we believe that further research in self-instruction will furnish deeper insights and clearer thinking concerning the improvement of education on elementary, high school, and college levels, and in adult education.

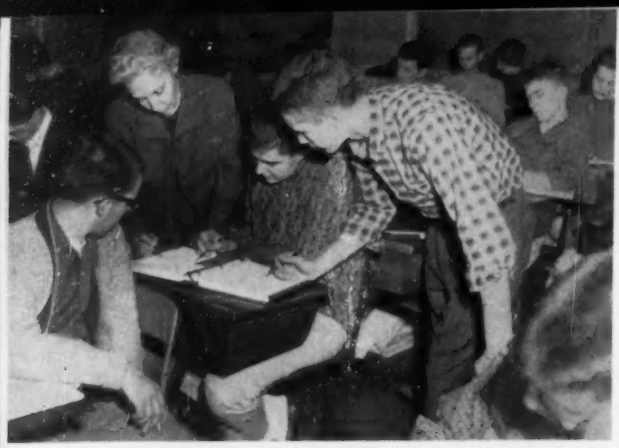
Five outcomes listed. Some of the valuable outcomes of this preliminary assessment of automated teaching were: (1) The pupil was motivated to learn as a result of his continued success built into the program. He knew immediately whether his response was right or wrong. This immediate response has an important effect on learning. (2) The pupil was permitted to proceed at his own rate. He was not penalized if he could go faster; neither was he punished by criticism or failure if he was a slow learner. (3) The pupil was involved continuously with a task. He was never idle or waiting for instruction from the teacher. He worked with no pressure except the will to accomplish his task. This was self-imposed discipline. (4) The pupil was required to depend upon himself. He became more independent because the classroom teacher was not permitted to give any instructional assistance. This point needs further evaluation but for this demonstration it is worth noting. (5) The pupil was motivated to read with comprehension. This by-product is a valuable adjunct to learning.

Teacher-student approach used in developing materials. During the summer of 1960, programed materials were further developed at Hollins College under the direction of Dr. Calvin. A staff of highly qualified professors of mathematics was employed to produce materials on the high school level. While the courses were being prepared, a number of high school and college students served as a pilot test group. Through programed material and personal association this procedure enabled the programers and the student to come in direct contact. When errors were made by students in the material, it became the responsibility of the programer to revise the material for further try-out by students. Through this process the programer worked continuously to improve the material and make it more meaningful and effective to the learner.

Material uses programed textbooks. When the present school year began the programed textbooks were ready. Now, the mathematics courses are being used by students in first and second year algebra, plane geometry, solid geometry, trigonometry, college mathematics, and calculus. The experimental groups include 11 teachers, 32 classes, and 847 pupils in three senior high schools.

The current research setup in the high schools includes, when possible, classroom groups in each area of mathematics. The typical organization of classes is as follows: (1) One class is being instructed by a teacher in the conventional manner. This class, the placebo group, is given considerable recognition and encouragement. (2) Another class is being taught with programed materials and with the assistance of a teacher. (3) A third class is being taught with programed materials but without the assistance of a teacher. These class groups are on the same grade level, and they are assigned to classes heterogeneously.

Many questions arise. Will this new approach to teaching result in an assembly line of learning, an un-



PUPILS and teacher discuss ideas suggested by the programed learning materials without bothering other pupils who are working independently.

CLASS, with no teacher help, shows self-imposed discipline, motivation to learn, independence and initiative in using programed materials.

manageable gadget, or a well conceived program that could revolutionize education? As one observes pupils at work, many questions arise. If they are to be answered, more research, experimentation and evaluation will be necessary. However, it is interesting to listen to proponents and opponents who offer ready-made answers. Experiments have demonstrated that programed learning *is* effective and already is producing amazing results in the improvement of learning. Some opponents have expressed violent reactions, as evidenced by this statement: "If you don't have a gadget called a teaching machine, don't get one. Don't buy one; don't borrow one; don't steal one. If you have such a gadget, get rid of it. The so-called teaching machine is a disease."

An unusual amount of interest and concern has been expressed by educators and lay citizens across this country in the Roanoke programed learning project. Many representatives of business, industry and education have observed pupils at work, have conferred with teachers, pupils and school officials, have met with those who are developing programed materials, and have heard reactions from school board members and other community leaders. The questions asked indicate a desire to learn more about programed learning and its impact on education. Answers to questions have come from pupils and teachers involved in the program as well as from those who are responsible for the materials used. Some typical questions and answers follow:

What is a "programed textbook"?

It is a loose-leaf leather notebook with 8½ by 11 inch pages. Inside the notebook on the left side is a movable plastic shield which reveals to the pupil, as it is moved downward, the correct answer to each question or "frame" (Illustration, p. 77). The material is presented in "frames" — statements or questions designed to teach in small steps so related that one step leads to the next. As each frame is completed the pupil moves the plastic shield to expose the correct answer. When each page of the frames is completed, it is taken out and placed in a pocket at the back of the book. The plastic shield then is returned to its original position, and the pupil is ready for the next page of work.

How is the programed textbook different from a workbook?

There is nothing magic about a programed textbook. The success of this device depends upon the material used in it. The textbook is concerned with the presenta-

tion of material to be learned and productive exchange between the textbook and the pupil. It reveals correct answers immediately.

Are pupils motivated to learn better because of the unusual amount of attention given them?

This we do not know. The results of the 1960 demonstration class and the drive that pupils displayed to accomplish their tasks may be due to the novelty effect. Then again, pupils may respond well because they are in an experiment. Other factors also may affect their learning rate.

This we do know. We are attempting to find the effect of a great amount of attention upon learning. This is being done through the several groupings in each subject matter area, *viz.* classes being taught in a conventional manner with a teacher, and classes being taught with programed material both with and without the assistance of teachers.

How well do pupils learn under programed teaching?

Preliminary assessment of automated teaching in first year algebra demonstrates that most pupils were able to complete an entire year in one semester. Pupils in high school mathematics this year appear to be achieving about as well as the demonstration class last year. It seems likely that some pupils will complete about one and a half years of mathematics in a year while the more advanced pupils will undoubtedly cover two years in one. It is conceivable that a few pupils will cover no more than a normal year's work. This is without any homework.

How well do pupils retain what they learn?

Further evidence is needed. So far, not enough pupils have completed courses in programed materials to provide solid conclusions. However, it is planned to retest – using a nationally accepted examination – the algebra demonstration class this month to obtain some data on retention.

How do pupils react to the program?

Most pupils respond favorably to the program. The opportunity to proceed at one's own rate is seen as a major advantage. As one youngster said, "I like this way better because it lets me go on my own and at my own rate of speed." "I like not having to do homework," another boy said. A bright-eyed girl put it this way, "It challenges you to go ahead and do the best you can. I want to get ahead of other students."

Placing responsibility upon the individual pupil is appealing to many pupils, but certainly not all of them. Some believe that a 55 minute period is too long for intensive concentration. A majority state that they prefer this way over the conventional method.

How do teachers react to the program?

They like the material. They approve of the way in which individual differences are cared for. In classes where they are not actively engaged in the day-to-day instruction, teachers do not like to be deprived of helping pupils learn. This is a different role and they simply don't like it. This is consistent with a large number of pupils' reactions. Pupils, too, want help from teachers.

A questionnaire will be presented to teachers after the first semester to find out how they react to the program and to phases of its operation.

Will the program replace teachers?

Primarily, the program is designed to present material to be learned. Material is presented in such way that the learner understands what he is to do and is able to proceed at his own rate. Instead of taking the place of the teacher, the program frees the teacher from having to dispense routine information or correct homework assignments. Teachers will have more time to counsel individual pupils, to discuss problems with pupils in small and large group situations, to help slow pupils, to explore with bright youngsters original ideas, and to do creative planning. The program should enable the teacher to use his art and ability in the unique responsibility of teaching values, feelings, convictions – great questions of human existence for which there is no substitute for the teacher.

The role of the teacher may undergo change, since pupils are able to complete more work in less time. This may mean greater flexibility in scheduling classes and other school activities, greater differences in class size, and changes in staff utilization.

What is the community reaction to the program?

When the school board approved the initial step in the program, a deliberate effort was made to inform the community of the new venture in education. Community organizations and groups were contacted and speakers were made available to explain the program. Parents, pupils and school personnel interpreted the new program to groups and to individuals. So far, the community has given excellent support to the program. ■

Television in the Classroom

Positive gains from ETV are observable in number of students served, motivation, content and extent of curriculum, and subject understanding

AN EVALUATION BY EIGHTEEN SCHOOL ADMINISTRATORS

Reported by Pat Russell

PUPILS learn in many ways, and we have a responsibility to help them to learn in a variety of ways. If television offers them additional ways to learn, we should use it without getting emotionally aroused."

Just as forthrightly as **William M. Brish,** superintendent, Washington County, Maryland, expressed his philosophy of educational television to the editor of The NATION'S SCHOOLS in a recent interview, 18 educators across the nation gave realistic appraisals of the effectiveness of ETV in their school systems. The consensus of these schoolmen: Television *is* effective in education.

How has the use of educational television in the classrooms of your school system (or in your teaching situation) affected the utilization of the existing teaching staff in terms of number of pupils served?

The group's answer: It has increased the number served.

Joe Hall, superintendent, Dade County, Florida, tells what has been done there: "Our plan of utilization has permitted us to redeploy 46 teachers this year without additional cost, providing special services in the areas of remedial reading, arithmetic and counseling. Fifty

Brish

Brownell

A JURY of administrators was invited by The Nation's Schools to express personal and staff judgments concerning values of ETV as experienced in their own school systems. Participating superintendents pictured here are: William M. Brish, Washington County, Maryland; Samuel M. Brownell, Detroit; Paul D. Cooper, Worcester County, Maryland; Joe Hall, Dade County (Miami), Florida; Philip J. Hickey, St. Louis; Robert E. Murray, Schenectady, N.Y.; Allen H. Wetter, Philadelphia, and Benjamin C. Willis, Chicago. Not pictured: J. Crockett Farnell, Tampa, Fla., Calvin E. Gross, Pittsburgh.

Cooper

Hall

Hickey

Murray

Wetter

Willis

thousand children have the resource of television in one of their classes. This additional service also has been extended to several thousand children in private and parochial schools and homebound situations."

The increase has been witnessed not only in the classes of a larger size that are possible through the use of television, but in "extra service to gifted and slow pupils in small groups, extra supervision, and in some cases, a lower pupil-teacher ratio," reminded **Allen H. Wetter,** superintendent, Philadelphia.

Wesley C. Meierhenry, assistant to the dean, teachers college, University of Nebraska, Lincoln, says that television permits "a major instructor" to reach "a larger group, while an assistant works with smaller groups, but a larger number."

Some of the administrators indicated that there had been no change in terms of the number of pupils served. One was **J. C. Wright,** former Iowa state superintendent of public instruction, who explained: "We have only a few educational television stations in Iowa. Most of the programs are to enrich the regular classroom program."

How has the use of educational television in your situation affected the quality of instruction as measured by traditional subject matter goals and evaluation instruments?

The consensus: It has improved subject matter understanding.

Paul D. Cooper, superintendent, Worcester County, Maryland, reports "dramatic improvement" in many instances, the reason being: "The instruction offered in our program has been in areas previously given little or no attention in the self-contained classroom."

In Philadelphia, Supt. Wetter said, "the standardized tests administered by the division of research to pupils in TV classes and pupils in matched control groups indicate that pupils in TV classes learn as well or better than those in traditional classes. Classroom teachers who are with pupils who receive TV lessons say that the TV teachers have time to prepare lessons with resource materials in a way that the classroom teacher does not have time to undertake. The classroom teachers concentrate on review, reinforcing, understanding and applications in the teaching and learning process. This teamwork approach, the teachers state, has resulted in improved teaching and learning."

Also reporting "considerably higher" achievement results in television classes than in controlled classes taught by conventional methods is **J. W. Edgar,** Texas state commissioner of education. "Also, they are higher than they were in the years when television was not used," he said. "This is especially true in the field of mathematics, for television instruction has emphasized the underlying principles on which mathematics is based. Students have learned better and remember longer from television classes."

Benjamin C. Willis, general superintendent, Chicago, informed The NATION'S SCHOOLS that evaluation tests of the city's experimental secondary school program showed no statistical difference between TV and control groups. "Slight advantage to groups taught partially by TV" was registered, he said, but differences were "not statistically significant.

"This was also true of in-school and home viewing of some of the junior college courses. There was a statistically significant difference in favor of educational television in biology, humanities, physical science, social science, psychology, mathematics and speech."

How has educational television in your situation affected the participation and motivation of students involved?

The panel's opinion: "favorably."

"Evidence" of high motivation by television for Supt. Willis is the fact that "about 65 per cent of the TV students finish their courses and take the final exam. This completion rate is quite remarkable when compared with other forms of adult education for credit."

OTHER ADMINISTRATORS who were members of the jury are these state school chiefs and college officials: James E. Allen Jr., commissioner, New York; Thomas D. Bailey, superintendent, Florida; Charles F. Carroll, superintendent, North Carolina; F. B. Decker, commissioner, Nebraska; J. W. Edgar, commissioner, Texas; J. C. Wright, former superintendent, Iowa, now with the A.A.S.A. committee for the advancement of school administration; Wesley C. Meierhenry, assistant to the dean, Teachers College, University of Nebraska, Lincoln. Also participating but not pictured was Frank R. Stewart, superintendent of education for the state of Alabama.

Wright

Allen

Bailey

Carroll

Decker

Edgar

Meierhenry

"In one survey of 2800 elementary and secondary students last year," reveals **Thomas D. Bailey,** Florida state superintendent of schools, "reactions were more than two-to-one in favor of instruction involving television on such questions as: 'Do you prefer it? Do you work harder? Do you gain from it?'

"The use of television as a basic medium for presenting information places upon the learner a greater responsibility for his own learning," he continues. "The material passes before him once, and he is fully aware that it is up to him to give it his undivided attention and to supplement the TV presentation with individual related study on his own."

Robert E. Murray, superintendent, Schenectady, N.Y., notes "a marked increased in selection of foreign languages since the advent of television programing in this subject matter area. In mathematics and science, enrollment trends are upward, due, in some degree, to the presentation of these subject matter areas via television."

New York's commissioner of education, **James E. Allen Jr.,** credits "a talk-back circuit — pupils to studio teacher —" in the closed-circuit television system in Cortland County for favorable student motivation.

How has the use of educational television in your situation affected the efficiency of expenditures of the instructional dollar?

Slight majority says ETV has given more for the dollar.

"The chief objective of our in-school ETV program is to improve instruction through enrichment and supplementation, not to economize," stated **Frank R. Stewart,** Alabama state superintendent. "We do believe that ETV makes it possible for Alabama schools to receive a great deal more instructional value per dollar spent (and much more quickly) than could be realized by any of the more conventional means of improving instruction." According to **J. Crockett Farnell,** superintendent, Tampa, Fla., educational television is responsible for elimination of some double sessions there.

Detroit has more than got its money's worth from ETV. **Samuel M. Brownell,** superintendent there, said: "We have been able to provide foreign language in the elementary schools at a cost for which we could not possibly have provided it otherwise."

Television has been especially effective in upgrading the staff . . . . Personnel must grow with the use of TV

Professor Meierhenry does not agree with the majority. He says: "Partly because of the nonacceptance of television at this point, a sufficient number of teachers and classrooms has not been involved to make it economically sound."

To what extent has educational television resulted in the expansion or extension of the curriculum in your school system or teaching situation?

Plurality regards it as considerable. Others would call it moderate.

In Pittsburgh a summer High School of the Air and a driver education program after school hours have been provided. To extend the curriculum there, a special series of programs on current events is available for intermediate grades.

Supt. Willis said that the TV college "permits the provision of the complete curriculum to a group at home not otherwise reached by a formal education program."

One of the chief benefactors of television is the small school, believes Commissioner Edgar, who said: "Television has made it possible for small schools to offer courses in such areas in the curriculum as science and mathematics where there were no qualified teachers."

Particularly at the adult level has there been considerable expansion of curriculum offerings in Florida, reports Supt. Bailey. "Thousands of adults and older youth have taken courses through the university extension or through local ETV programs," he said.

To what extent has educational television been useful and effective in the inservice education and professional upgrading of the staff, as compared with traditional methods and practices?

All participants but one say "more effective."

"This has been one of our greatest gains," stated **Charles F. Carroll,** North Carolina state superintendent. "The television teachers have worked together in workshops to prepare course outlines and have met together in subject groups to review and refine curriculum."

Nebraska's state commissioner of education, **F. B. Decker,** said "the instances in which there has been professional upgrading relate most directly to the experimental program on elementary science. Here we are quite pleased."

Professor Meierhenry is "convinced" that television's "most significant asset is the one of inservice education. The teaching profession has been different than any other professional group in that classroom teachers have had seldom, if any, opportunity of observing other professionals at work.

"By means of television instruction, it is possible to evaluate and observe instruction in a cool and calculated rating fashion. Improvement of teachers in both subject matter and methodology has been marked."

Summarizing the status of educational television today, we again quote County Supt. Brish: "The big challenge is getting TV accepted as a resource. This shouldn't come too fast, because personnel must grow with it, understand how to use it, and realize its potentials as a resource to the school program." ■

Language Laboratories

Experience with language labs establishes the need for good supervision and sustained enthusiasm. Here's how to plan, what to expect

ELTON HOCKING

IN THE last few years, enrollments in foreign languages have been increasing more rapidly than the school population, and language laboratories have been multiplying even more rapidly than enrollment. These laboratories are very recent developments, and yet the U.S. Office of Education announced a year ago that there already were more than 1000 of them. Today there are doubtless many more. What have we learned about them in these few years?

We have learned that language laboratories can provide a unique service to foreign language teaching only if they are well planned and their materials are adapted to the teaching which they supplement. We also have learned from a few misguided ventures that they can provide a severe headache to teachers, students and administrators. The headaches derive primarily from poor administrative planning or supervision. Worst of all is the laboratory purchased by the administration without consulting and sometimes even without informing the language teachers. Fortunately, there have been very few of these horrible examples.

An elaborate language lab may be as glamorous as a fancy hat, but unless it is used it is a waste of money. And some labs are gathering dust like an unwanted hat. Sometimes the teachers *thought* that they wanted a lab but they did not really know what it involved. The first question that the administrator must ask himself is: Do my teachers want it? And next: Do they really understand what it is, and what it does, and what it cannot do? Do they realize that it may involve radical changes in teaching methods and materials and technics? (The 1959 policy statement of the N.A.S.S.P. is explicit about this.) Have some of them attended a N.D.E.A. foreign language institute in 1959 or 1960? Can they count on my support in terms of money and time?

If the answers are all Yes, you may confidently go ahead with cooperative planning for your language lab. But if some of the answers are unclear, or clearly No, then caution is in order. In any case, as many as possible of your foreign language teachers should attend a N.D.E.A. institute next summer. (To be assured of serious consideration, prospective participants should be sure applications are postmarked by March 1, according to Lawrence Posten of U.S.O.E.) It will make them better teachers, with or without a lab and regardless of their present abilities. It will involve no out-of-pocket expense, and they will get the finest instruction in modern methods, materials, devices and technics. They will have a refreshing experience and will be qualified — with your support — to use a language lab successfully and to help their colleagues use it. And they should be given a salary increment regardless of whether they received graduate "credit." Graduate schools are reluctant to award credit for practical rather than scholarly work, but the intensive experience of the institute will, by its very nature, improve notably the performance of your teachers.

We Have Learned Much

What we have learned about language labs:

1. The lab is a tool, and it must be used skillfully and understandingly.

2. This tool has a definite purpose: to provide audio-visual and oral practice in the foreign language to all students simultaneously. If your teachers are determined to approach the language only through grammar and translation, the lab is not for them.

3. The lab is a fairly elaborate electronic tool or complex of tools requiring technical maintenance, repairs and replacements. Such work is not a task for language teachers.

4. It is a *supplement* to teaching, not a substitute.

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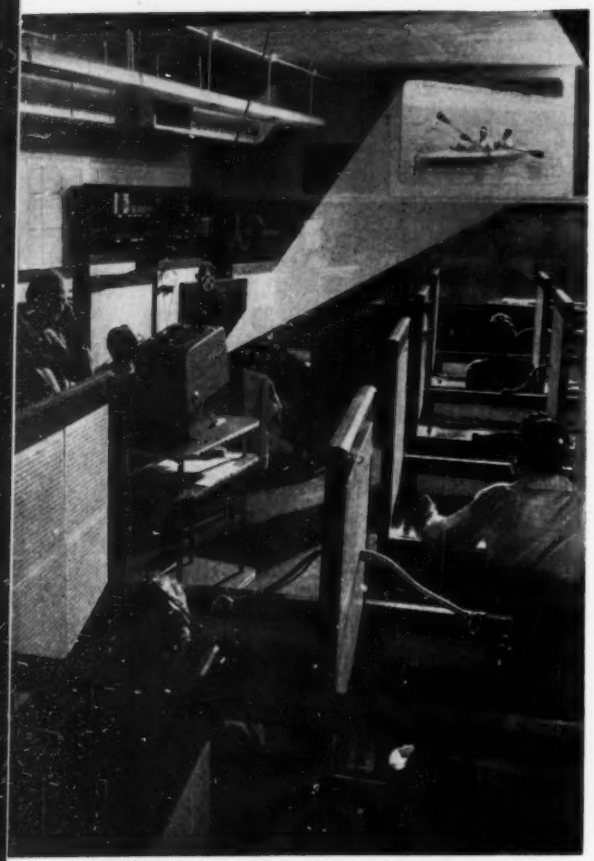

SOUND TRACK is heard through headphones which shut out extraneous noises. This picture illustrates combining the visual with the audio in the language laboratory.

5. Like the teaching machine, it is only as good as the "program" or materials fed into it.

6. The language lab does not save time or money but, like any good equipment which is wisely used, it yields a high educational return on the investment.

7. Like equipment in general, the first cost is not the last. Systematic preventive maintenance is necessary, as are periodic overhauls and eventual replacements. Spare parts must be kept on hand and a competent technician must be engaged, perhaps part time, to do all this. The really serious cost of breakdowns is the demoralization of teachers and students alike. Such educational loss is prohibitively costly. It can be prevented cheaply by systematic preventive maintenance.

8. The primary saving of the lab is educational. This saving results from unique service: All students are enabled to practice aloud simultaneously, rather than one by one.

9. Such practice should be not only vocal but also audio and visual.

10. Projected pictures — films, slides, filmstrips — provide the "situation" usually involved in simple conversations. The pictures make clear what the conversation is about and thus remove the need for translation.

11. The pictures also can present authentic aspects of foreign life and people, thus providing a social context and genuine insights into other folkways.

12. A fair amount of recording equipment will enable each student periodically to hear himself, to criticize and evaluate himself objectively, and to make a cumulative appraisal of his own progress.

13. This objective approach to learning a foreign language provides a new point of view on the student's mother tongue and indeed on language itself — what it is and what it does to us and what we do to it. This unique insight can be a Copernican step for the perceptive student and a broadening experience for all.

14. The language lab thus provides a new tool for simultaneous linguistic practice integrated with social studies, and insights into the nature of language *per se*, "the very essence of the humanities."

THIS INTEGRATIVE CONCEPT of foreign language study is quite different from what most of us met in our student days. It is not truly new, for a few of our best teachers always have held to it. However, the great majority taught a modern language as Latin and Greek were taught; indeed modern language study in this country derived from the classical tradition of grammar and translation.

During World War II the armed services found that our language "majors," in general, were unable to converse with a native speaker. The army set up a crash program to provide audio-lingual skill to a fair number of carefully chosen men. Contrary to widespread belief, the "army method" made very little use of audio-visual

aids; in fact, there was a directive that prohibited the spending of federal funds for this purpose. A few phonographs and a fair number of impounded foreign films were available. Late in the war came the "sound mirror," the first crude form of magnetic recording.

What was really novel and important was the concept that oral communication was of primary importance, that reading came later if there was time for it, and that study of grammatical structure was secondary – merely a means to the end of speaking and understanding. In short, language was learned (rather than "studied") in its primary form, which is vocal.

The postwar leadership of our country, our economic and military involvements abroad, and the development of rapid travel and better communications stimulated a renewed interest in foreign countries and increased the need to speak their languages. Now the early prospect of international television reception is a similar development. Early in the 1950's the Foreign Language Program of the Modern Language Association focused interest on our need of foreign language skills to meet our country's new commitments. Foreign language enrollments began slowly to rise from their depression of 30 years. It was, however, the National Defense Education Act of 1958 which drove home to our people the urgent need of widespread skills in science, mathematics and modern foreign languages. This legislation took careful notice of the recent devices and audio-visual aids, and provided matching funds for purchasing them. This gave the great impetus for the language lab. The advent of the lab reinforces the modern concept of language learning in the primary sense of speaking and understanding. If this is not the goal of elementary language classes, then the lab has no real function.

There are pockets of resistance here and there, at both secondary and college levels, but the audio-lingual method is generally no longer considered a fad. It has achieved official sanction by the M.L.A., the N.A.S.S.P., and all the national societies of foreign language teachers. The oral method is here to stay, and so is its valuable new ally, the language lab.

Unfortunately for the new method, it is subject to misunderstanding. It is not just "talk." Mere conversation is doubtless "good enough" to teach the preschool child who is exposed for years to his mother tongue during all his waking hours. But for our adolescents who hear a foreign language only in their daily class, which is about 4 per cent of their waking hours for 36 weeks, the amount of learning would be almost infinitesimal. For them, the amount of language to be learned must be drastically reduced in scope, organized into short daily dialogues of natural but simple phrases, and drilled *ad infinitum* with carefully controlled variations. Each new dialogue introduces a homeopathic dose of new expressions and repeats previous ones, with variations.

In short, the lab materials must follow the principles of overlearning and progression by minimal steps, with reinforcement or correction at every step. Each new element and each "reentry" must be tabulated. And, withal, the expression must be natural, the subject interesting, the voice lively. The devising of such expert materials is an artistic and pedagogic *tour de force* requiring much experience and infinite pains. Clearly it is no task for the average teacher, even if he had the time for it.

Up to now, the absence of such beginning materials has handicapped the audio-lingual method and the language lab. It has resulted in such dubious makeshifts as the recording of standard textbook materials. Inevitably there have been some disappointments, and the lab has been blamed. Fortunately, special materials devised by professional experts are now becoming available. A million dollar project will soon be available in several languages for beginning classes. There also will be available several completely integrated series involving color films, filmstrips, manuals for the teacher, and (for use after the prereading period) workbooks for the students. Only with such materials can best results be obtained from the audio-lingual method and the language lab. Even so, they must be used by teachers who understand them and are trained to use them well. The N.D.E.A. institutes will provide such training this summer to some 3000 teachers who are yet to be chosen.

What and When to Buy

The foregoing is not intended to imply that a modest start may not be made unless the teacher is an expert. That warning applies only to fairly elaborate installations. Any teacher should use a tape recorder if it is provided with recordings made by an authentic expert. (Not all commercial recordings for language classes can qualify.) Lacking this, a simple phonograph can play imported recordings of songs. Popular songs or hit tunes are not to be disdained: The diction of Jacqueline Francois, for example, is impeccable. The old saying is still true: "If they can sing it, they know it." And singing gives a "lift" that many language classes need.

From mere recordings to the language lab is a big step, and it is here that the expert is needed, not only to use the lab, but to plan it. But before considering equipment there should be a clear understanding about ends and means. Administration and teachers should agree on the financial, operational and pedagogical planning. For all these, the "Purchase Guide," sponsored by the Council of Chief State School Officers, and its 1961 "Supplement,"[1] are basic, and likewise the September 1959 issue of "Audio-Visual Instruction."[2]

Next the state supervisor (Title III, N.D.E.A.) of foreign languages should be asked for advice on which

[1]Council of Chief State School Officers: Purchase Guide for Programs in Science, Mathematics and Modern Foreign Languages, Ginn and Co., 1959. 1961 Supplement. Free to superintendents from C.C.S.S.O.

[2]Department of Audio-Visual Instruction of the N.E.A.: Audio-Visual Instruction, Sept. 1959. 50 cents.

DO'S

1. Define teaching objectives and choose equipment that will implement them.
2. Engage a consultant to help to plan, evaluate bids, do the final checking of installed equipment.
3. Plan for an audio-visual lab, with provision for viewing as well as hearing and speaking.
4. Follow the specifications and advice of the "Purchase Guide" (C.C.S.S.O.) and "Supplement."
5. Correlate lab and classroom work as closely as possible and introduce new material first in the classroom.
6. Build an expandable and flexible lab, to cope with increased demand and with new improvements in equipment.
7. Provide for regular preventive maintenance, with an annual budget of 5 per cent of your total cost.
8. Have the lab director study the growing literature on the subject and take a workshop course.
9. Reduce by half the teaching load of the lab director and allow released time for all teachers who prepare lab materials.

DON'TS

1. Don't do it yourself. Planning a lab requires as much knowledge as planning a radio station.
2. Don't leave the planning of the lab to the administration or A-V specialists, who usually know little about FL teaching.
3. Don't accept inferior sound; it should be free of extraneous noise, as natural as a live voice.
4. Don't use printed materials in the lab, except perhaps in a test.
5. Don't forget that a lab is no stronger than its weakest component. (Components should be tested by instruments.)
6. Don't expect lab equipment to function all the time; provide spares for one-fifth of the equipment or schedule only to four-fifths capacity.
7. Don't introduce the lab program to all courses at once; limit it to one course taught by an enthusiast.
8. Don't expect the lab to reduce the teacher's work; it will redistribute it, reorient it, and increase it.
9. Don't construct drills with free responses; there should be just one predetermined answer, which the student hears as reinforcement after he has replied. — *Recommendations of a special conference of experts of the Modern Language Association of America.*

successful labs to visit. Principals or assistant principals might well accompany small committees of teachers during unhurried visits to at least two high school language labs.

At this point, specific planning becomes possible. One of the teachers becomes chairman of the committee and plans to attend an institute if he has not done so; the state supervisor sits in as adviser, and he is asked to nominate a disinterested paid expert as a technical consultant. Methods, materials and technics of teaching are agreed upon and then, for the first time, salesmen are received and bids are sought.

In general, it is desirable that the operating equipment, such as tape recorders, be kept out of the booths, because there is considerable danger of damage. It is possible, with only switches at each student's disposal, for remotely controlled equipment to provide every booth with record-and-playback facilities.

A less costly installation provides no recording facilities, but only "activated headsets." These enable each student to hear himself electronically even while he speaks. They should be supplemented by a fair number of recorders, and guaranteed to be (or to be made) compatible later with a full complement of recorders, when funds become available for them. Provision should be made for the projecting of visuals, also.

Even if the stringency is less great, the "library type" of language lab is unsuited to high schools in general. The language class, with its teacher, must go to the lab at one of its regularly scheduled hours. Two periods a week is about right. More frequent sessions of one-half period each are good, provided that the lab is close at hand and classes can be moved without confusion.

All signs point to a continuation of the current steady increase of popularity of the modern foreign languages, and at all school levels. Nearly a million children in the lower grades are now getting foreign language instruction regularly. The longer sequences and the "hearing-speaking method" complement each other. The language lab will play an increasingly important role, especially at the beginning and intermediate levels. The eventual results should be a vast contribution to our country's linguistic sophistication, to its understanding of our neighbors abroad, and, in general, to the national interest. ■

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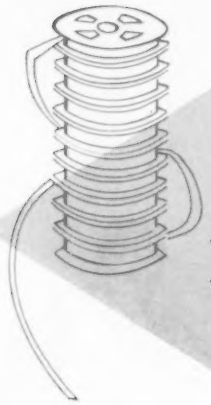

Local Production

The quality of learning can be improved if teachers prepare their own instructional materials. More time and facilities are needed

ERNEST TIEMANN

A NEW concept concerning instructional resources is emerging. Traditionally, the classroom teacher has been limited to the use of a few resource materials including the textbook, reference books, workbooks, maps and globes. The teacher had little opportunity to create and develop his own instructional resources. As a result, teaching procedures became somewhat stereotyped and dull.

Within the last decade the educational profession has become aware of the many new technological developments that make it possible for the teacher to work cooperatively with other specialists in designing and producing instructional resources.

This has produced a new educational team composed of a production specialist, a research and evaluation specialist, and an instructional resources specialist — all working hand in hand with the content specialist, the classroom teacher.

Recommend the cross-media approach to teaching. Conscious of its responsibility to increase learning efficiency, this production team was sensitized to the importance of gearing instructional resources to individual use, small group use, and large group instruction. In its study of the newer as well as the traditional media, this team took a hard look at the strengths and weaknesses of each one and, on the basis of this research, recognized that a cross-media approach to teaching was desirable. There seemed to be evidence that one media reinforced another in the communication of ideas, or that one media was better suited to communicate a certain idea than another media. For example, the use of still pictures reinforces the motion picture for discussion purposes. A field trip can contribute much toward making a classroom discussion more meaningful.

The teacher is the master planner. If learning is to be improved, the teacher must be concerned with the problem of programing instruction in a way that will maximize learning. The teacher must recognize that the learner is the central figure in any learning situation. The learner must be a rational participator rather than a receptor of impressions.

The teacher must direct the use of instructional resources in such a way that the experiences provided will cause something to occur *inside* the learner that will enable him to remember and to use what he has learned. If the teacher is to prescribe the experiences to which students are to respond, then it is necessary for him to gain the necessary insights and understandings of each instructional resource he uses.

The teacher needs assistance. If learning needs are to be met, the teacher will have to create materials for his own use. The administration should make it possible for teachers to have a workroom available in each school

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STUDENTS (right) can give meaning and expression to abstract ideas with teacher guidance in use of instructional resources.

TEACHER (below) can express his creativity and ingenuity and thus improve the quality of learning if he has the facilities for preparing instructional resources.

building where they have access to the necessary facilities, equipment and materials to prepare these resource materials.

To help teachers gain skills in the preparation and use of these resources, qualified professional leaders should conduct workshops. Production specialists can help teachers visualize ideas and make them more meaningful.

Production facilities are needed. Teachers need an area where they can prepare their own instructional materials. Here pictures can be torn from obsolete magazines, mounted and arranged into teaching units. A dry mounting press and other equipment and materials should be available. Photographic and darkroom facilities and an area for preparing graphic materials and constructing models and objects should be maintained.

Specifically, the following equipment and materials are needed: dry mounting press, air brush, cameras and enlarger, flannel boards, display facilities, photographic supplies, lettering equipment, mounting supplies, felt tipped pens, and coloring and shading materials.

With an opportunity to exercise initiative and creativity in the preparation of mounted pictures, flash cards, signs, graphic posters, enlarged drawings, tape recordings, photographs, slides, overlay transparencies, and other inexpensive instructional materials, the teacher

Today's projectors — opaque and overhead, lantern and 2 by 2 slides — are so flexible and so easy to operate that teachers welcome opportunities to explore and invent uses for them

is in a position to do more effective teaching. He can present experiences not currently included in the programed materials that are available commercially. Encouraging teachers to create materials of their own strengthens their professional competencies and inspires them to undertake more intensive research.

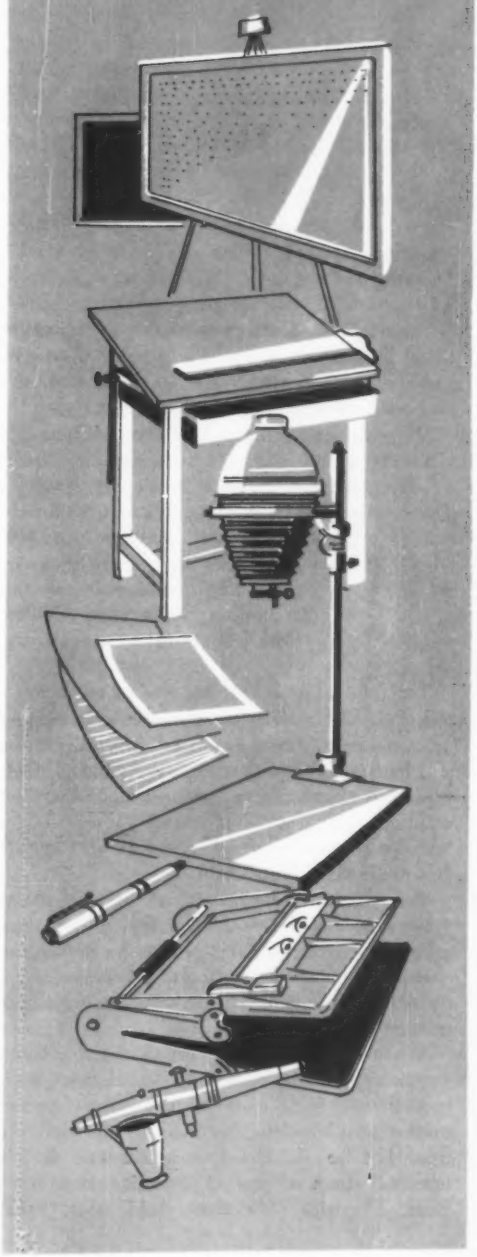
When teachers have an opportunity to use materials they have developed and created themselves, they are apt to use them more effectively. They are motivated by the knowledge that opportunity was provided for them to give expression to their own ideas by visualizing them in graphic form. This encourages curriculum building on the part of the local teaching staff.

In providing leadership and facilities for the preparation of instructional materials, the school administrator has ready access to resources to interpret any phase of the school's program to the public. School displays, slides, overlay transparencies, charts, graphs and visualized publications can be prepared at the local level.

Education involves more than learning. It supplements knowledge with judgment and understanding. It involves the ability to think, the will to reason, and the insight to enjoy and yet to change the world.

Providing the teacher with the opportunity to express his creative ingenuity through planning and designing his own instructional media contributes much toward improving the quality of learning. ■

Teachers need photographic equipment and graphic supplies to prepare instructional materials



Administration

It's the staff that sets the example. Here are questions of leadership, budget and coordination for the administrator to ask himself

ANNA L. HYER

BROADLY speaking, the major responsibility of the school administrator is for the *quality* of the instructional program. In the school of today this most certainly includes responsibility for the provision and use of a wide range of instructional materials.

Many persons living today can recall when the schools were concerned primarily with teaching the three R's to only a small percentage of the school-age population. The drop-out rate was high; this was expected and even considered desirable because of the demand for unskilled labor. The textbook was the teaching tool, and the method of instruction was to read and recite the material in it. The school catered to the verbally talented, and the purpose of the high school was to prepare students for college.

The role of the school changed as the needs of society changed. The development and conservation of our human resources became a vital problem in our society and has remained so to this day. As the societal demands upon the schools expanded so did our knowledge about children and how they learn. These changes led, in turn, to changes in the curriculum and in the methods and materials of instruction.

Today, our concept of an adequate instructional program is totally different from that of a generation ago, and we give at least lip service to the necessity for a wide variety of methods and materials of instruction, including the so-called audio-visual materials, or the new media.

What role should the school administrator play in encouraging the use of audio-visual materials? His attitude toward these materials is a critical factor in determining whether these materials will be used. His attitude need not be verbalized, only implied, to have a pronounced effect on teacher behavior. How important are films, filmstrips, television, field trips, slides, locally produced materials, transparencies, recordings and the many other nonbook materials used in audio-visual instruction? Clues to an administrator's attitude will show up in the ways he answers the following questions.

Does the administrator use A-V media in his school system?

There is a saying that teachers teach as they are taught. An administrator sets an example when he holds a citywide teachers meeting over closed-circuit television, uses transparencies on an overhead projector to present a problem to the board of education, or discusses a new film on a curriculum problem at a faculty meeting. He also sets an example if he does not use audio-visual media in the communication tasks.

Is the administrator aware of and open-minded about new technological developments?

As a leader, an administrator must be informed about new technological developments and their implications for education. He must be open-minded about innovations, and he must be a leader in professional assessment, not swayed by emotional fears, by worship of the status quo for its sake, or change for the sake of change.

Administrators might well ask themselves what they are doing to encourage experimentation with the new media to determine their role in solving current educational problems – their role in large class instruction, team teaching, variations in size of instructional groups, individualized instruction, in redeployment of teachers? What has been done to encourage the development of new uses of the tape recorder, the overhead projector, the local preparation of simple teaching materials, or the use of television?

Is the administrator concerned about preparing teachers to use audio-visual materials? In talking with teach-

ers about their interviews with prospective employers, I found that none had ever recalled being asked about their experiences in preservice education that would help them in using audio-visual materials. These teachers did recall being asked about many things from extracurricular activities to experience in teaching Sunday school classes, but they were not asked about the newer media of instruction. Yet, in a survey made by the National Education Association a few years ago, about half of the teachers said they felt inadequate in their use of audio-visual materials.

Because so few of the teachers today are prepared adequately to use the newer media and because the field is changing rapidly, inservice training opportunities are essential. The administrator might ask himself these questions: How long has it been since my teachers had an opportunity to participate in a new media workshop, an extension course, or to see a demonstration? What preparation did my teachers have before the language laboratory was installed? Do I give recognition or commendation to teachers making creative use of audio-visual materials?

Leadership is the key to a good audio-visual program. A superintendent's opinion of audio-visual materials is indicated by the type of man he selects to supervise audio-visual activities. If he views these instructional tools as gadgets, he hires a gadgeteer. If he places no great importance upon audio-visual materials, but wants only to keep up appearances, he cares only about creating a "resemblance" of a program; he probably will assign to a staff member, who has some free time, the job of supervising audio-visual activities, regardless of his training or interest. If, however, he believes these media play an indispensable role in achieving curricular goals, then he hires a professionally trained supervisor and expects him to work with other supervisors on curricular problems.

About 88 institutions around the United States are seriously engaged in preparing teachers for such positions as audio-visual directors, coordinators or supervisors, and instructional materials coordinators or directors. These training programs are offered almost entirely at the graduate level because it is felt that successful teaching experience is a necessary prerequisite. Recommended areas of study include: curriculum development on the elementary and secondary levels; audio-visual resources and their utilization; preparation of audio-visual materials, such as graphic, projected and broadcast; administration of audio-visual resources; other areas necessary to qualify for supervisory positions. Persons so trained usually are employed at the going rate for supervisors or directors in the school system.

Coordinator needed in every building. If a school system is to get its money's worth from a systemwide audio-visual service center, "support getting" leadership is needed in each school building. The person so designated frequently is referred to as the A-V building coordinator. He is the link between the teacher and the systemwide service center and its director. Sometimes the principal assumes this role himself; sometimes he assigns this responsibility to the librarian or a teacher. Naturally the more knowledgeable this individual is about curriculum and media, the better is the service he is capable of giving.

Here are some services the coordinator (or his counterpart) performs:

1. Keeps the teachers in the school informed about available materials.
2. Helps teachers select suitable materials to meet their needs.
3. Assists teachers in making better use of materials.
4. Supervises the evaluation of materials used in the school.
5. Coordinates the orders for materials requested by the teachers in the school.
6. Schedules materials and equipment.
7. Trains personnel to operate equipment and trains and supervises student projectionists.
8. Supervises the storage and distribution of materials deposited in the school.
9. Provides, within the school system's plan, facilities for the production of materials, and assists teachers and pupils in the production of materials needed for broadcasting by teachers in his own building.

Is sufficient time made available for the audio-visual director and the building coordinators to perform their functions? Although conditions vary greatly, studies show that where reasonably adequate use is being made of the newer media, a full-time professionally trained audio-visual supervisor is required in a school system with 50 or more teachers. A quarter-time supervisor may suffice in a system with 12 or fewer teachers, and a half-time supervisor in a school with 25 teachers.

The duties and responsibilities of the supervisor usually are more than he can perform personally. Hiring less expensive assistance (clerical, technical, supervisory, delivery, photographic, art and so forth) can make the time of the professional director go farther and allow him to concentrate more on professional functions.

It is wasteful to hire professionally trained people and then skimp on the time allowed for the operation of the audio-visual program.

How adequate is the financial support for the instructional materials program? Not even good leadership can compensate for lack of a budget to obtain the teaching

(*Continued on Page* 104)

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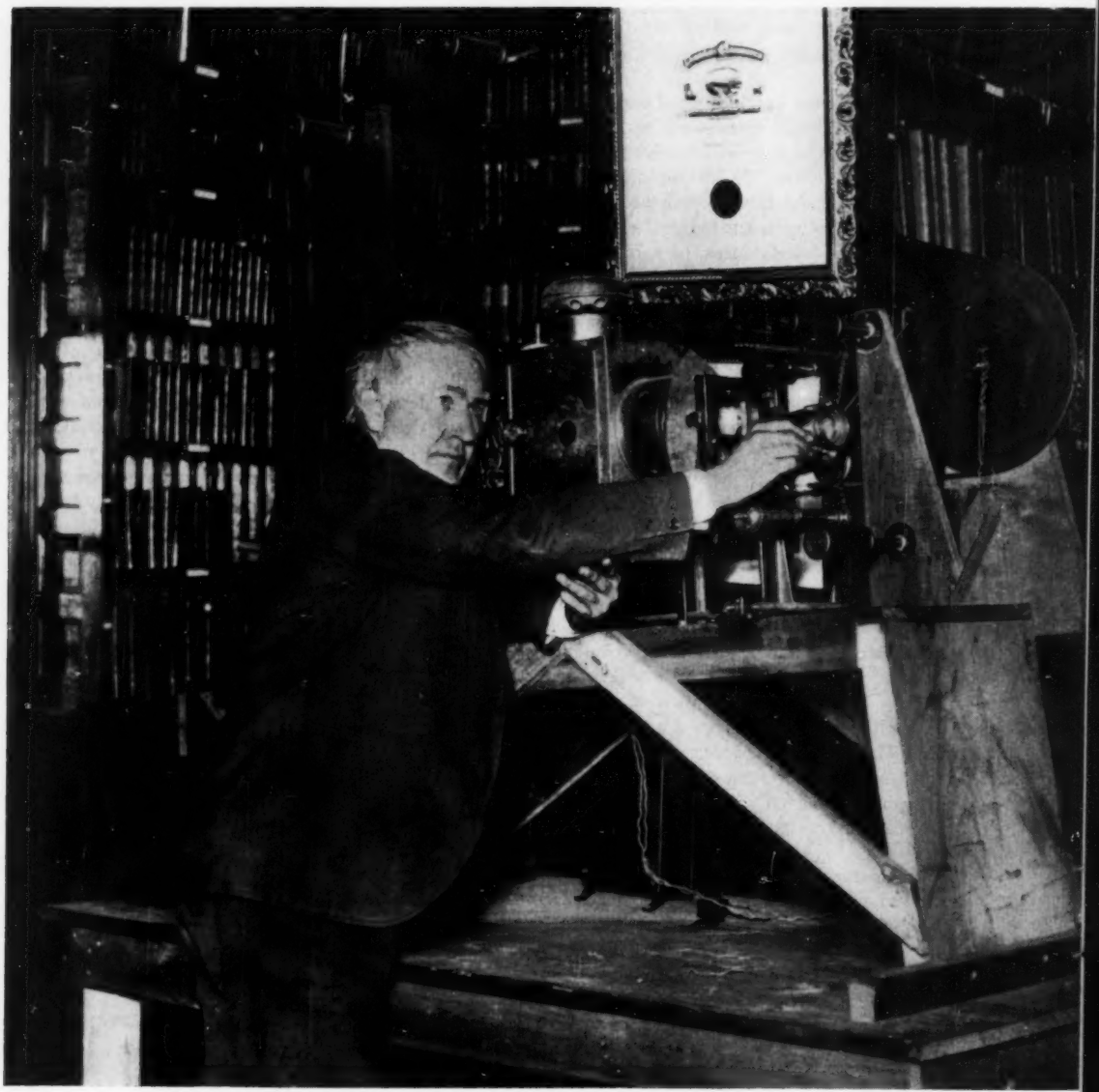
FIRST ELECTRIC LIGHT bulb (left), invented by Thomas A. Edison in 1879, was result of 50,000 experiments. Finding a suitable material for the filament (shown) was the greatest handicap in perfecting the bulb.

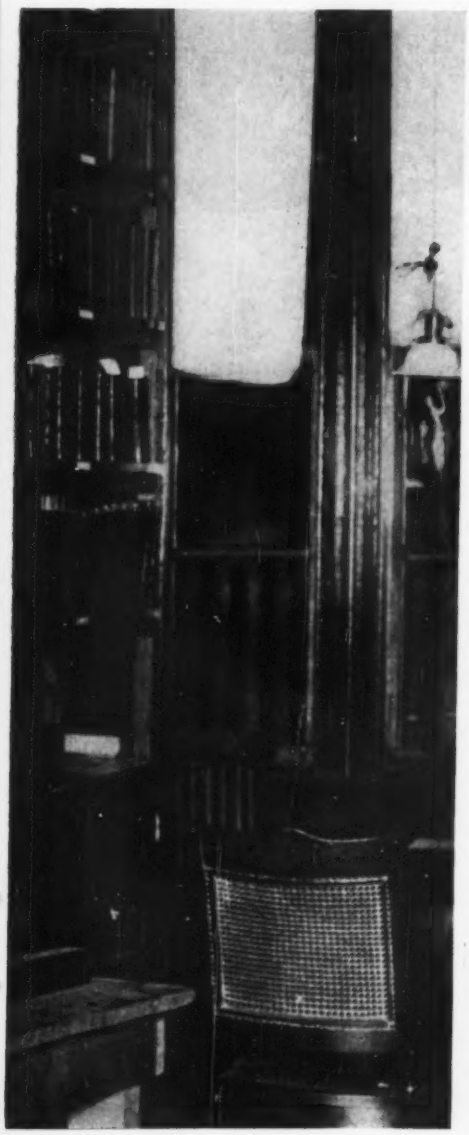
MOTION PICTURE MACHINE was invented by Edison immediately after George Eastman produced negatives on cellulose film. Here Edison projects a strip of cellulose negatives in his new machine, demonstrating principle that continues in use to this day. Edison's baggy trousers often were referred to in references to his appearances before Congress, in editorial offices and at the Chicago World's Fair.



The inventor of the phonograph, motion picture projector and camera, microphone and radio and television facilities,

Edison Pioneered Audio-Visual Learning

OTIS A. CROSBY



ALEXANDER the Great made known – nearly 2300 years ago – something of his regard for education when he said, "I am indebted to my father for living, but to my teacher for living well." And almost a century ago Thomas A. Edison looked at this age-old business of learning and talked of the complicated mechanics of teaching. Said Edison: "Most of our textbooks . . . seem to look upon the whole process of education as a job of dull and uninteresting work. . . ."

Indeed, it was dull in those days; learning was largely confined to the word of the textbook. Edison, himself, lacked virtually any formal schooling (probably less than one year). His initial interests in learning can be traced back to his mother, who sparked his lifelong career for education through her home teaching.

It was this same "unschooled" Edison, however, who was later to pioneer a revolutionary movement in American education and to awaken an interest in learning within youth. Edison is regarded as the person most responsible for the inventions and basic developments out of which emerged indispensable audio-visual aids to modern teaching. Ease of learning was an expressed objective of the inventor, who coupled the ear with the eye in his endeavors to get real support for textbook learning. Edison spoke of his efforts in terms of visual education. In at least one instance, he took occasion to define the subject: "Visual education is the imparting of exact information through the motion picture camera."

Edison's "invention shops" were the beginnings of modern laboratories for industrial research, such as are prominent in every major industry today. Colleges and universities, in turn, soon followed in establishing research laboratories for experimental purposes.

Experiment and invention comprised the total interests and personal career of Thomas Edison at an early age. He had a wholly new concept of work. Together with a small staff, he devoted much time to a study of

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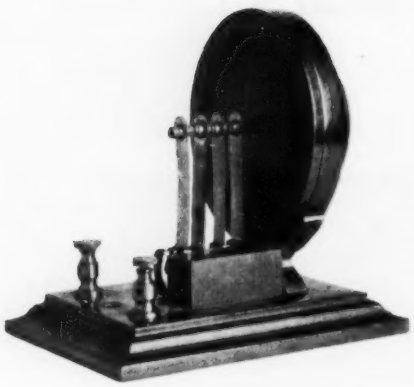
OTIS A. CROSBY . . . with the department of information, Detroit public schools, since 1933 . . . assistant director, since 1954 . . . past president, National School Public Relations Association. . . .Since 1925, author, teacher, lecturer, editor.



CARBON MICROPHONE (left) was one of Edison's "satisfying" inventions. It later was used in improving the telephone and was adapted for many other audio uses.

FIRST MOTION PICTURE CAMERA (right) was invented by Edison in 1887. The principle of the camera continues in use to this day. The original camera is on permanent exhibit at the Henry Ford Museum in Dearborn, Mich.

INVENTIONS THAT TOUCH NEARLY

what needed to be invented that might be of greatest worth to mankind. He "attacked" one subject at a time. He viewed each project as a separate operation and assigned work to his staff members according to their interests and skills. For example, when the incandescent lamp was under development, one staff member worked on the holder for the bulb, another on the wiring, and still another on putting the wires through the glass. Edison reserved to himself the task of developing a filament for the bulb. With this approach to inventing, the modern approach to educational and industrial research ultimately was developed. It was this procedure that guided his invention of the phonograph, a duplicating machine (mimeograph), a motion picture camera, and a machine for projecting the pictures.

An alert sense of observation and a relentless measure of patience mark the labors behind his invention of the phonograph at the age of 31. He had pricked one of his fingers in a minor accident. His experience of feeling vibrations, as a result of the incident, set his mind to "vibrating" at once. Thus was born the idea of "canning" voice vibrations.

Success was immediate. In fact, his very first trial astounded him because it was successful. He was so shocked at the outcome of his first endeavors in developing a talking machine that he put the "contraption" on a top shelf where it remained for some time.

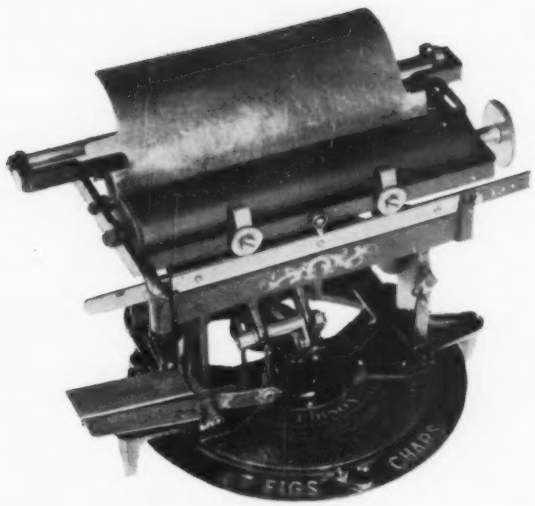
The invention ultimately was revived, and he was hailed as the first person to put sound on permanent media. While the initial effort was rewarding in the successful and instant response, history shows that the inventor later made tens of thousands of records in perfecting the machine.

Edison's vision as to the future of the talking machine is recorded on a patent application filed in Washington, D.C. In it, as in all of his patent petitions, he listed the uses to which he believed the machine might be put eventually. Patented in 1877, the talking machine has served to validate Edison's long-range foresight.

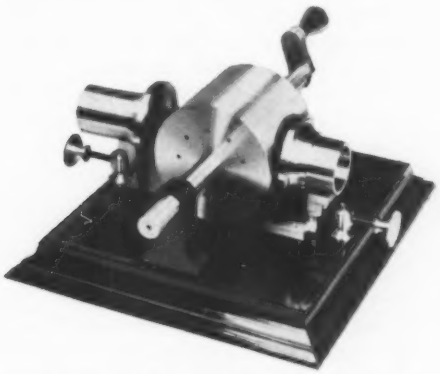
Of those projected uses, one, the speaking doll, was not fully developed until nearly a century later — the fall of 1960 — when it was broadly adapted to entertain children.

Here is a list of Edison's suggested uses for the talking machine, as stated in his patent:

1. For lay writing and all kinds of dictation without a stenographer.



MIMEOGRAPH TYPEWRITER (left) was perfected by Edison following his invention of the electric pen. These inventions operated similarly in that each punched tiny holes in a stencil to permit ink to penetrate to the paper.



ORIGINAL PHONOGRAPH (above) was a cylinder covered with tinfoil and turned with a hand crank. To Edison's amazement, this "talking machine" performed successfully on the first trial. A horn, attached at the right of the phonograph, was used as a microphone for speaking into the cylinder. This machine, along with the motion picture, gave Edison much personal satisfaction from the standpoint of its potential in education as well as an entertainment medium.

FIRST FLUOROSCOPE (below), not patented, was Edison's contribution to medicine. This invention led ultimately to today's television picture tube. This fluoroscope may be seen at the Henry Ford Museum in Dearborn, Mich.

EVERY A-V AID!

2. For making "books" for the blind.
3. For teaching elocution.
4. For reproducing music.
5. For the recording of sayings, reminiscences of the family, and the last words of dying persons.
6. For music boxes and toys.
7. For use in clocks to announce the time for going home, for meals, and so forth.
8. For preserving languages.
9. For preserving the explanations of the teacher for pupil use in education.
10. For transmitting records over the telephone.

The world's reception of Edison's wholly new idea of "audio education (and entertainment)" was immediate. Fourteen years later (in 1891), when Edison invented the moving picture, he looked back to the talking machine and said: "I believe immensely in the phonograph, but talking machines can never do what moving pictures can do in forming the thought and habits of the world."

Now that he had a machine that would talk, Edison hoped to make pictures that would move. He proposed to do for the human eye what the phonograph did for the ear, and then, by a combination of the two, produce

a picture that would move and talk simultaneously. He achieved this goal in 1887 by inventing the motion picture camera and projector.

George Eastman of Rochester, N.Y., had just manufactured a photographic film on a nitro-cellulose base to replace the wet (glass) plate. It was but a quick decision for Edison to perforate the edge of the film so that it could be transported in a projector, thus giving the illusion of movement. The principle of the Edison camera continues in use to this day. The camera was patented in 1891, as was his projector. Edison built the first motion picture studio, "The Black Maria," in West Orange, N.J., with a roof that could be raised and lowered. The entire building rotated on a circular track so that the greatest amount of sun could be available at any time.

The first moving pictures made showed one of Edison's studio employes, Fred Ott, in the act of sneezing.

Here's what Edison said about using the motion picture in connection with teaching: "The feature that appealed to me was the educational possibilities. . . . I had some glowing dreams regarding what the camera could be made to do and ought to do in teaching the world things it needed to know — teaching it in a more vivid, direct way."

Best Known For Electric Light

The world knows Thomas Edison best for his invention of the electric light. Its contributions to visual education are almost beyond measure. The arc light had its limitations, especially in a projection camera with [what was then] flammable film. While many persons believed that Edison had rather limited interests in religion (he objected to such comment), it is thought that the words in the Book of Genesis, "Let there be light," may have inspired him. Although this may or may not be true, the great inventor began research on the electric light at Menlo Park, N.J., in 1878.

In developing the incandescent bulb Edison's greatest problem was to get the right filament. He achieved success in 1879, and was granted the first patent in 1880. In all Edison claimed 169 patents on lights. He tells of having formulated more than 3000 different theories in developing the electric light.

Edison believed that of all the myriad inventions for which he was credited and the thousands of experiments which he performed in a wide variety of scientific fields, none had the potential of the moving picture. During his work on the motion picture camera and projector, he invariably associated his labors with the future of American education.

In 1877, he said: "If the motion picture has done nothing else, it has been the greatest quickener of brain action that we have ever had. It has stirred up sluggish brain cells as all of the printing presses of the world could not do. . . ." That Edison was enthusiastic about the potential of motion pictures in education is further attested in his words: "I consider that the motion picture is destined to revolutionize our educational system, and that in a few years it will supplant largely, if not entirely, the use of textbooks in our schools."

Some measure of the potential of the motion picture, as held by Edison, can be realized in his statement about teaching the social studies. He envisioned photographing the lives and preserving the voices of the great men and women of the world — "Can you realize the tremendous impetus this would be to the study of history and economics?"

Edison's many contributions to the audio-visual field might be continued. His patents touch almost every accepted machine or device for recording and reproducing sound and picture. He observed that the phenomenon of sound waves would lead eventually to the radio, of which two fundamentals are directly traceable — the microphone (patented in 1877) and the Edison Effect (patented in 1883), a forerunner of the radio tube. Edison invented the modern megaphone; this has its counterpart in the "bull horn," which is often used by coaches on the athletic field. The wireless telegraph, first patented by Edison in 1885, led to wireless communication from ship to shore.

All of this points to Edison's contributions to wireless telegraphy. He was granted a patent for the nickel-alkaline battery, which is the "engine behind many audio and visual aids," after having completed 50,000 experiments over a 10 year period at a personal cost of $3 million.

Prior to 1900, Edison made inventions in the fields of education, transportation, communication and entertainment. His many contributions to audio-visual communication include: the stock ticker; the ticker that recorded in printed type; the vote recorder; the universal printer; the telegraph with its many variations including the quadruplex, the sextuplex, and the multiplex; perfection of the typewriter; the development of the mimeograph; the fluoroscope, which later blazed the path to the picture tube in today's television sets; the telephone, an invention arrived at independently but simultaneously by three other men; the carbon transmitter; the motograph; the Edison loudspeaker or telephone amplifier; the carbon mike; the tasimeter, which measures temperature to a millionth of a degree, and the electric pen.

Edison's capacity for work is almost beyond human conception. Between the years 1870 and 1876 he is credited with 122 patented inventions — an invention every two and one-half weeks for six years. It was the beginning of 1099 patents credited to him, with foreign patents in 34 countries.

Educators and students everywhere today enjoy the contributions of this mastermind — Thomas A. Edison — to intellectual progress. Whether Edison's inventions were inspired by a desire to help in formal schooling (where he had not, himself, found happiness), or his love for children (he had six sons and daughters), or perhaps in giving "life" to the early, dull textbooks shall never be known and is not now important. The important fact, however, is that learning has not only been eased, but accelerated for millions through Edison's efforts. ■

APPRECIATION is expressed to these officials of the Henry Ford Museum and Greenfield Village, Dearborn, Mich.: Minor Thomas, chief curator, and Robert C. Boelio, press relations manager. Machinery depicted in this story and other inventions mentioned are a part of the vast Edisonia exhibit at the museum and village. Many of the machines were demonstrated for the author.

Schoolhouse Planning

The new media can be most effective in a carefully planned environment. The architect should have detailed specifications

CHARLES F. SCHULLER

WHAT should we be doing about educational motion pictures and ETV in our building plans? What provision should be made for conduits, acoustics, electrical circuits, and exterior light control for use in the newer communications media in our schools? Are there "specs" and recommendations for such things?

There are, and we will describe them briefly.

Tooling Up for Tomorrow's Needs. The population explosion is now an old story to most administrators. The public is becoming aware of this increased population through crowded classrooms, half-day sessions, and enlightened information campaigns about what a subpar education can mean to their children.

However, there is another explosion of even greater concern to many educators today. That is the explosion of knowledge. You can say it many ways, but what it adds up to is the simple impossibility of catching up and keeping up with new knowledge and new needs by old methods. And education, the most important social agency and the biggest business in our country, is the only one still trying to do so.

There are exceptions. Since before World War II, a vital nucleus of educators has been hard at work with research, experimentation, teacher education, and salesmanship in attempting to convince the educational world of the efficacy and the need of audio-visual materials and methods. As with many new ideas in education, progress has been slow. But it is picking up. There are more than 100,000 16mm. sound projectors in use in the nation's educational and training programs. The nation has some 55 ETV stations and 161 educational radio stations. More than 560 colleges and universities offer teaching courses in the use of the newer media.[1]

Through N.D.E.A., the Congress of the United States has given specific impetus (in Titles III and VII) to the acquisition of needed audio-visual equipment and to expanded programs of research and experimentation in the newer media fields. The Fund for the Advancement of Education has stimulated extensive activity of various kinds in educational television. In February the Midwest Program on Airborne Television Instruction is scheduled to start three hours per day of demonstration broadcasting from 23,000 feet, to an area including 13,000 schools and 5 million students. A six-hour, 37 week schedule is planned to begin in September with courses from elementary schools through the college level. A new dimension is being added to American education.

Buildings Suited to the Task. In the process, the adequacy of both old and new buildings for use of the newer media comes into sharp focus. Good seeing, hearing and ventilation conditions must prevail if audio-visual tools are to be used well in classrooms and study halls. This doesn't mean merely in audio-visual or multi-purpose rooms, which, at best, can be used by only one group at a time. Nor does it mean there should be "blackout" facilities in *all* classrooms. *It does* mean that we need facilities in all rooms for reducing exterior light to the point necessary for good, nonglare viewing of opaque projection, of color slides or films, and of tele-

CHARLES F. SCHULLER . . . director, audio-visual center and professor of education, Michigan State University, since 1952 . . . assistant director, bureau of A-V instruction and assistant professor of education, University of Wisconsin, 1946-52 . . . A-V training officer, U.S. Navy, 1943-46 . . . teacher and principal, Wisconsin schools, 1929-36 . . . chairman, Educational Media Council . . . former president, Department of Audio-Visual Instruction, N.E.A. . . . former chairman, Audio-Visual Council on Public Information.

[1]de Kieffer, Robert: A-V Activities of Colleges and Universities in Teacher Education. Audio-Visual Communications Review, Vol. 7, No. 2, Spring 1959, Pp. 123-126.

Golemon and Rolfe, architects-engineers, Houston

vision. Rear vision screens are useful for some projection needs, but by no means for all.

More specifically, what provisions are needed? Briefly these, in my judgment:

Light Control

Opaque Plastic Draperies on heavy duty traverse track, full-closure Venetian blinds, or full-closure opaque jalousies in all classrooms and other projection areas.

Dimmer Light Controls on overhead lighting.

Ventilation

Minimum of 10 cubic feet air change per student per minute. Year-round air-conditioning is becoming economically feasible for certain types of new construction.

Electrical Installations

Switches and Outlets: (1) room light switches at front doorway and also at point of projection; (2) two standard 110 volt AC outlets on front and rear walls and one on inside wall, two circuits per room; (3) outlets on separate circuits from overhead lights; (4) sufficient circuits to permit simultaneous use of projection equipment in any number of adjacent rooms, circuits fused to 15 amperes with circuit breakers rather than fuses; (5) outlets above each bulletin board or pegboard in classrooms, corridors and display cases.

Conduits: (1) 1 inch conduit with speaker cable and outlets permanently installed from front to rear of each classroom; (2) 1½ inch to 2 inch conduit to front of each classroom for central sound system wiring and coaxial cable for closed-circuit TV; (3) 1 inch conduit to front of each classroom from base of television antenna and wired to jacks in classrooms and auditorium.

Acoustics

Acoustic Tiling where needed.

Wall, Floor and Ceiling Construction which prevents sound transmission from or to adjacent instructional areas. Avoid air ducts which lead from room to room.

Following are other items that I consider necessary:

Chalkboards and Bulletin Boards: (1) Pastel chalkboards across front of each classroom with display rails mounted above; (2) bulletin board on side, front or interchangeable with section of chalkboard; (3) bulletin boards lighted by shielded fixtures in corridors, if appropriate. One 4 by 8 foot section of pegboard recommended for each classroom.

Exhibit Cases: (1) recessed exhibit cases of sliding plate glass and lockable windows at appropriate points in all corridors and in some classrooms; (2) interior walls suitable for mounting of materials and frequent repainting to fit exhibit requirements; (3) adjustable glass shelving, lighting and electrical outlets; (4) cover arrangements when facilities are not in use.

Storage Space: (1) 18 by 40 by 24 inch storage cabinet with lock in each classroom for projectors, and so forth.

Door Sills should be flush with floors at all room entrances.

Control of light is essential. School buildings that are designed to be flooded with natural light and are psychologically "open" to students pose real difficulties for teachers who desire to use the newer media, unless the room is provided with adequate draperies or blinds.

The new Wylie E. Groves High School in Birmingham, Mich., uses a dim-out approach. About half of the exterior wall in each classroom has only a narrow strip of window, which is located above eye level. This section of window has draw draperies for use during projection or TV viewing.

Still under construction in Westport, Conn., is the Hillspoint School, which has been designed to take advantage of newer instruction media and technics. This school is planned for maximum flexibility. It has classrooms arranged in clusters of three around one larger interior room, which, in turn, can be divided into cafeteria and gym-auditorium areas. Between each of the classrooms is a soundproof movable partition that can be opened for large group instruction for two-room or three-room combinations. (See illustration.)

Eventually, all rooms in the building will be provided

COMPACT and virtually windowless schools are preferred by some school districts because of greater ease in darkening classrooms for audio-visual purposes and greater economy in the installation of air conditioning. Here are two examples: A new senior high school in South Park Independent School District, Beaumont, Tex., (left) is planned for extensive audio-visual instruction and has solid wall construction. Another example is Hillspoint Elementary School (right) in Westport, Conn. All rooms are A-V equipped.

Victor A. Lundy, architect, New York

with draperies, wall screens, and TV conduits for in-class projection or TV viewing of open or closed-circuit programs. Each classroom will have display and counter space, running water, and storage facilities for inclass production and exhibit of materials.

Hillspoint School will have a library-instructional materials center and art, science and materials production rooms surrounding the large interior section. Principal Irving Pike states that facilities and staff are being provided for team teaching, large group instruction, and self-instruction through tapes, overhead projection, programed texts, and filmstrips.

Air conditioning is practical. Air conditioning is coming to be recognized as economically and educationally sound for schools. During substantial portions of the school year (as much as 24 per cent in Minneapolis, 32 per cent in Chicago, and 34 per cent in Cleveland), outside air temperatures are above the minimums necessary to *reduce* classroom temperatures to efficient working levels with usual ventilation systems.

Complete air conditioning (heating, cooling and humidity control) is a natural answer. It becomes practical when it makes possible important economies in construction and efficient use of interior sections of the school building.

A number of air-conditioned schools have been constructed in the South and Southwest including San Angelo, Tex.; Hobbs, N.M.; Phoenix, Ariz., and Atlanta. Most recently approved is a new senior high school in Beaumont, Tex., which is distinguished, among other things, as one of the few windowless schools approved for construction. Its square floor plan permits economical construction as well as flexibility of interior arrangement. (See illustration.) Complete provisions for use of the newer media are incorporated in the building plans.

Structural designs for all school buildings should include facilities for convenient and regular use of the newer media of communication. Such provisions make possible the development and implementation of those teaching and learning technics required of our educational system for today's world. ■

Perkins and Will, architects-engineers, Chicago

Photo by Bill Hedrich, Hedrich-Blessing

FOR SCHOOL DISTRICTS that prefer extensive use of fenestration, combining outdoor vision strips with corridor lighting, the classroom still can be suitably darkened with use of efficient Venetian blinds, draperies or similar materials. This classroom is in the Community High School in Wheaton, Ill.

Research

Under N.D.E.A., $8 million has been obligated to date for research and experimentation in uses of new educational media. Here's a progress report

C. WALTER STONE

IN CAPSULE form the N.D.E.A. Title VII story is this: Thus far, 138 research grants have been awarded, and 56 contracts have been or are being negotiated for the conduct of dissemination activities. In all, approximately $8 million has been spent or obligated to carry out the purposes of Title VII.

Granting that the program has been launched successfully, some important questions which should be asked are these: What differences are Title VII projects making toward the improvement of instruction? What is the outlook for the future?

As a partial answer to these questions, I shall review with you the several programs established with Title VII support, and then look at some aspects of Title VII efforts which possibly could stand improvement, a shift in emphasis, or which may simply require a careful review and some rethinking.

Stimulates a spirit of inquiry. The stimulus already provided by Title VII for new research, experimentation and innovation in the uses of new educational media has been considerable. It's a stimulus which has reached far beyond the 700 individuals, organizations and institutions represented by Title VII applications.

From evidence already gathered (most of it gained informally) there are now few states, major school systems, or universities which at some point during the last few years have not given special attention to problems associated with improving their instructional materials programs as a result of the stimulus provided directly or indirectly by N.D.E.A. and Title VII.

So, even before we've heard the results of the specific Title VII projects, I believe we can say accurately that a major stimulus has been given, a stimulus which is encouraging more reliance upon research and experimental approaches for the definition and resolution of educational problems in our schools and on the college campus. As one indication of this, there seems to be a new spirit abroad, a spirit of inquiry and a willingness to try new approaches. Personally, I believe that this may well be the single most important accomplishment which a program such as that developed under Title VII may yield. But now more specifically, what does the new educational media research program add up to at this point?

As one takes into account the 138 grants that have now been awarded, there are a few generalizations which can and should be offered. First, there is still much interest (probably too much interest) in proving some things we already know (for instance, that television and related media can be used successfully in teaching; that with these media we can reach out to relatively large numbers of individuals simultaneously and more or less effectively and thus help to expand and to equalize public educational opportunities). Fortunately, this type of project interest does appear to have declined, al-

The Purpose of Title VII. Part A of Title VII of the National Defense Education Act (P.L. 85-864) authorizes research and evaluation of experiments involving the use and adaptation of newer media for instruction, the training of teachers to use such media, and the presentation of academic subject matter. Under the provisions of Part B of Title VII, the commissioner of education is asked to conduct needed surveys and studies and is instructed to prepare and publish catalogs, reviews, bibliographies, abstracts, analyses of research and experimentation, and such other materials as may prove useful. He also is required to furnish upon request advice, counsel, technical assistance, and demonstrations that may serve to inform school and college administrators, teachers and interested lay personnel of optimum ways in which newer media of communication may be employed to the advantage of public elementary, secondary and higher education. The Title VII program is administered by the U.S. Office of Education with the help of an advisory committee of 14 distinguished Americans.

though there is still considerable interest in comparing the effectiveness of using this or that medium with more conventional methods, and in probing deeper into areas of research already pretty well plumbed by foundation efforts and by such Title VII projects as those developed in Maine, Florida and Utah. These three projects reach out to some of our more isolated and rural schools or directly into homes via television and related media, to provide some new and enriched educational opportunities.

Renews interest in quality of education. Without discounting the importance of continuing limited efforts in this area, it is more encouraging to see the renewed interest which has emerged in media research which is especially concerned with the study of factors relating directly to the quality of instruction. Several Title VII projects are especially concerned with utilization factors and are now getting down to definitions of the kinds of situations and methods which may be appraised as most effective for using the new media in education. Also, several studies of production factors now in progress should yield in some abundance valuable information about the attributes or special characteristics of specific media presentations (*i.e.* television programs, films, filmstrips and so forth). For example, what difference does it make when a presentation follows a specific order or when it has been produced after changing specific format variables?

Evaluate combinations of newer media. There is also a special and intensive interest today in research concerned with improving teacher education, inservice as well as preservice efforts. This is a major type of research effort being recommended to the U.S. Office of Education. Especially promising is the interest which has been shown in doing research and experimentation to discover what can be accomplished by employing combinations of newer media (or systems approaches) to implement learning processes. Title VII projects currently supported at the University of Chicago, in Denver, and in Pittsburgh are examples of this type. Also of interest in this connection are projects involving auto-instructional devices (*i.e.* teaching machines) and in particular several projects which call for the use of such devices in combination with other media (*i.e.* television, films and filmstrips).

Another interest in new educational media research is that which has grown out of attempts to achieve some new goals in education and to implement new curricular plans (*e.g.* Trump plan; the Scientific Inquiry Training Program supported at the University of Illinois). Teaching machine researches aimed at providing more opportunities for individualized instruction, self-learning, and the self-pacing of learning are further examples of projects that represent this interest.

What are the chief weaknesses of research applications received in the Office of Education requesting Title VII support? Here are a few of the major weaknesses which have been noticed particularly by the staff and by those consultants and specialists who work with us in the preliminary analysis of proposals.

Some research proposals lack significance. Probably the greatest weakness of proposals we have received to date could be called a "lack of significance." Or, to paraphrase one member of the advisory committee, there is far too little "poetry" in the proposals which have been submitted. To be approved under a federal program such as Title VII provides, the significance of a research proposal must be judged on the basis of at least these three characteristics: (1) the degree to which the research proposed will contribute to the development of *new knowledge* and technics involving educational uses of newer media, as opposed to reaffirming results of past work; (2) the *importance of the educational problem* with which the project is concerned, and (3) the extent to which the project being proposed will yield information having *wide applicability.* (For example, a study which may produce results of regional or national interest is regarded as more appropriate and eligible to receive federal support than a study which is likely to have purely local outcomes.)

Good design sometimes lacking. Next, lack of good design (*i.e.* research plan) is also a too frequent characteristic of the proposals coming in even from rather prominent institutions and individuals. Perhaps it is simply a matter of haste or one of carelessness. Or perhaps in the case of too many researchers, there really is a serious lack of "know-how" (which may have some things to say about the training of research personnel). The research plan should anticipate use of those procedures and technics of investigation which will enhance the possibility of generalizing results of research proposed beyond a purely local setting.

An apparent lack of knowledge of the literature which covers what has been done by others and marked lack of reference to pertinent theory also are characteristics of too many Title VII applications. These lacks result again and again in apparent desires to "re-invent the wheel" or "to invent gunpowder once more," so to speak, in the new educational media field. There is serious failure evident in many proposals to budget properly or to anticipate, with even a reasonable degree of approximation, the probable costs of research effort. In this day and age when help from specialists in fiscal matters is so readily available to most educational systems and institutions, such weaknesses are hard to excuse.

A general problem which affects the research program is the shortage of qualified media research personnel and what some believe to be a possible saturation of the field. However, offsetting this problem to a degree is the increasing interest being shown in New Educational Media by research specialists working in a variety of fields.

New directions and dimensions needed. From the point of view of the U.S. Office of Education staff (which is based on examination of research proposals, travel over most of the country, and many informal talks with leading research personnel), we believe that some new directions and dimensions must be given the research effort. For instance, few projects received to date suggest probing very far, if at all, into the field

Needed: More study of teaching situations; more group thinking; more study of higher thought processes

of semantics or into basic communications problems. However, underlying effective use of newer media must be some new and sound research in these fields. To date we have received very few proposals which call for examination of the effects of varying the source of a message on its effectiveness for learning. For instance, does a student tend to learn factual information more effectively when he is taught by a worldwide authority via television than when the same lecture is delivered by his own teacher in the classroom? Does a person having status succeed more effectively than others in modifying attitudes in film and televised instruction?

Also, there have been few proposals concerned with the problems of reducing "interference" among channels used to transmit a multi-channel message. Here's one example: How can the visual and auditory channels of an audio-visual message be tailored to augment one another so as best to increase learning?

Other profitable areas of research would appear to be those dealing with idea density, "readability" and redundancy in the preparation of educational media. Applied studies might well incorporate more testing of principles previously established in such areas. Further, those responsible for development of the field might give special attention and more support to new projects which are not precisely demonstrations nor research efforts but which have critical importance at this time.

Need more study of actual teaching situations. There is serious need at the present time for developmental programs which can effectively demonstrate innovations and applications of the new educational media in actual teaching situations. (Unfortunately, support of such projects requires substantial outlays for facilities and equipment which are beyond the resources of the current Title VII program.)

Why? Well, from my own point of view, too many of the research ideas which have been discussed lately and too many conversations I have heard among those expressing interests in research suffer from a form of sterility and are hardly likely to yield much more than exercises of a more or less academic nature in manipulating statistical measures. Now this does not in any way discount the importance of doing painstaking and very careful research, research which does not always yield dramatic results, but which bit by bit through the increment of significant data and evidence provides important information on the basis of which sound planning and development can be done and important changes in instructional practices made. I *am* making the point, however, that too much of the research proposed and some of that in progress supported by various agencies simply will not yield either any very significant bits of information or any really important accomplishment.

Series of conferences could provide fresh approach. One positive way in which this situation could be remedied might be to convene a series of meetings of educational specialists concerned with various disciplines and subject matter fields and to spend whatever time it would take in simply trying to search out those problems of teaching and learning which are paramount in the minds of those actually working in the field. At the least, such an effort might bring a fresh approach to the program and, by supporting it with funds from the dissemination effort, a few such conferences could be held.

Looking ahead to the future of the research program, we also may say this: To compare the use of newer media with more conventional methods of instruction no longer appears fruitful. Probably most of the answers we are likely to get from this type of research have been obtained. Also, there is little need to investigate much longer the effectiveness of newer media in providing information to large numbers of people.

Should study higher thought processes. There is, however, a basic need for much more research in the effects of new media on creativity and higher thought processes. We do need a number of studies concerning administrative patterns. For example, we know that administrative problems may work to inhibit effective use of media and effective learning from media in many ways. But the argument here is not the one concerned with making surveys of normal administrative *practice.* We need careful experimentation and observation of *effects.* What happens when you modify the class schedule or change a particular arrangement for planned use of faculty time? What about the effects of independent viewing by students? What happens when instruction proceeds primarily in small groups?

Much additional work is needed on the internal aspects of media, *i.e.* on production variables, programing technics, and the reorientation of production technics according to various theories. Another valuable field for investigation might be the study of interrelationships which exist or might exist among media and the impact of these upon specific plans for utilization. In brief, some new directions should be followed, some of which may have just been identified.

• • •

NOW, let's discuss the dissemination program. The main focus of this program has been to establish a basic foundation of information regarding research

and regarding significant teaching programs and practices involving the use of new media, and to broadcast this information as widely as possible. Thus far, it has been possible to keep rather sharply in focus each of the dissemination efforts endorsed, and to use each new contract awarded as a means of carrying forward the basic program objectives previously discussed.

Growing out of these efforts today are plans for a major research information service program which were developed in May of 1960 and which have since been "polished." Compilation of a national guide to instructional materials will probably begin during 1961. Basic studies and surveys have been or will have been conducted covering each of the major areas of professional concern in the new educational media field (*e.g.* studies associated with audio-visual services, training, elementary, secondary, higher and teacher education; development of specialized media service programs by interested professional groups; special studies on budgets, buildings and equipment). In brief, a schedule of basic studies and surveys is now being rounded out, and by the close of 1962 it should provide us with a full cross-sectional view of the roles that new media have assumed in American education and suggest worth-while and new approaches for future use of these media.

What are some of the weaknesses observable in dissemination efforts? So far, we really haven't obtained any significant visibility for new educational media programs. Of course, the U.S.O.E. is not alone in this. With all of the research that has been completed at several universities – reports of which have been issued broadly – there is no significant evidence to show that results of very important studies of educational uses of films and television are generally known, understood or applied. Insofar as the general public is concerned, it still knows almost nothing about newer media research projects and U.S.O.E. dissemination activities. In part, this is because of lack of staff. Much more importantly, the new media story hasn't yet been told to those who must come to understand it if public support is to be given to schools and colleges, chiefly because of two factors: (1) We aren't entirely certain yet of what the story is which should be told, and (2) we don't know how to go about telling it.

There is urgent need for a common approach. And now, here is a special challenge. The problem of developing adequate professional standards for specialists who work in one or more of the several fields supported by media is acute. It suggests a possible need for a new program, agency or institution which might be called the National Center or Institute of Communications Arts and Sciences. The Center could bring together representatives of the major professional groups working in the field for discussion of mutual problems and interests pertaining to each field and for development of professional standards, training activities, and the like. One organization that already has been formed to serve a somewhat similar purpose is the Educational Media Council. Perhaps the Council could be asked appropriately to plan and/or sponsor development of such an agency. However, one suggestion does stand out above others in our discussion of this idea. There is urgent need for a common approach to the professional fields represented by new educational media service programs. Perhaps such a *new program* could provide one answer.

Here are some general problems with which those working in this field must especially be concerned. First, there is the question of residual rights and royalties, a cluster of knotty, difficult, urgent dilemmas. Another set of problems which must be faced is that which is associated with too rapid development and over-promotion of new media hardware systems by some who are primarily concerned with the creation, manufacture and sale of equipment and materials of various kinds. Illustrations of the problem are numerous but perhaps two will suffice. First, there is the teaching machine field; second, language laboratories. A possible resolution of the many difficulties raised might be found in quick but responsible preparation and wide distribution of handbooks addressed to those who purchase and use such new equipment and materials. The handbooks might cover such topics as technical specifications and standards, maintenance problems, and pedagogical requirements. One such proposal is now being explored by the U.S.O.E. with representatives of the interested industries and professional groups, looking ultimately toward the preparation, publication and wide distribution of a handbook on language lab devices.

Critical problems: Unwarranted fear of mechanization; no agreement on national policy; failure to use vast libraries of new materials

Among other critical problems are: (1) attacks on media research and experimentation by those who fear too much the mechanization of learning processes; (2) failure to develop and put into operation positive plans for the use of the vast libraries of new materials that are now building up in the form of large collections of kinescopes, tapes, films, filmstrips and the like. And perhaps the most crippling problem of all is that, as a nation, we have actually failed thus far to clearly define national policy and to establish the most appropriate roles of professional groups and the federal government

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in working in the media field. A related job is now being tackled, at least in part, by the Educational Media Study Panel set up by the Department of Health, Education and Welfare. However, the Panel is giving primary attention to policy factors which must be considered in planning for educational uses of television. The chief roles and responsibilities of the U.S.O.E. itself with respect to newer media in general are not yet clear-cut, are not defined, are not understood, and in my judgment will require continuing discussion.

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WHAT should be said in conclusion?

In my judgment, even the most cursory review of the accomplishments of new educational media programs to date will disclose that some difference *is* being made in instructional programs and practices. It's being made because we *do now know* a little more than we did previously about the instructional values of newer media. Also, more teachers and school administrators *are* better acquainted with effective ways in which to use the new resources. And one indirect result of the program that can be observed readily is that new materials are much more available than formerly, from private as well as public sources.

However, as yet not enough has been accomplished in achieving professional and public understanding and appreciation of the improvements in education that may be realized with the help of the new resources. What are the main reasons why new educational media still are not used widely in American schools and colleges? The answers I submit are these: (1) We still don't actually know enough about their instructional values; (2) most of us haven't yet been trained to use the media well, and (3) for all practical purposes, the newer media are still too unavailable and inconvenient for most teachers to go to the trouble of using.

As for the work of the U.S.O.E. staff during the months which are just ahead, our main attention, I believe, should be concerned with carrying forward the research and dissemination programs as established and endorsed to date, with this proviso, that we plan to give special attention (unless directed otherwise) to the following problems and concerns:

1. A need to strengthen the research effort: (1) improvement of specific proposals, and (2) development of new ideas for research.
2. A strengthening of research and program information activities (already launched under the dissemination program) giving special attention to the need for development of materials which will interest a nonprofessional audience.
3. The problem of rights and royalties: (1) review of the copyright policies, and (2) broad dissemination of information regarding all related policies.
4. The too rapid development and over-promotion of "hardware" programs.
5. Attacks on new media research and experimentation by special interest groups.
6. Development of plans for state and regional use of large stocks of materials already produced.
7. Need for support of local, state and regional demonstration activities having primary value for local regions or institutions.
8. Coordination of all program efforts (on an international basis) with similar efforts supported by private foundations, associations and government agencies. ■

ADMINISTRATION (*Continued From Page* 91)

materials and equipment that teachers need and want. Nothing discourages the use of A-V materials more than having to depend entirely on rental sources – booking may have to be made six months to a year ahead of need – or on an inadequately supplied local audio-visual center where materials are either out of date or continually unavailable. If audio-visual materials are to be an integral part of the curriculum, the right materials must get to the right place at the right time.

The budget required will vary greatly, depending on such factors as size of school population, extent of audio-visual use, whether the audio-visual program is being initiated or maintained, and the like. A study group has recommended that for an adequate program about 1 per cent of the instructional budget should be spent in obtaining audio-visual materials. Another recommendation is that $4 to $6 per pupil be required to finance all aspects of a desirable audio-visual program.

Do the buildings facilitate the use of audio-visual materials? There is a direct relationship between the amount of use teachers make of audio-visual materials and the ease with which they can be used. Ideally, every classroom should have light control and electrical facilities that make it easy to use nearly every kind of equipment available within a matter of minutes. If this goal has not been achieved, the district should have a systematic plan for moving closer to the goal each year.

No new building should be constructed that does not provide for the full use of all audio-visual tools known today, whether or not these tools are being used at the time of building. Also, space is needed for storing audio-visual materials and equipment and for preparing inexpensive materials by teachers and audio-visual coordinators. Flexibility should be the keynote in new buildings. There are now so many new technological developments being tested, and more are expected, that no one can predict what the school of tomorrow will be like.

Is the audio-visual program evaluated periodically? Dissatisfaction with the status quo is the first step toward improvement. Few, if any, school administrators are satisfied with the instructional program in their schools. The important thing is to know how the program measures up; this is as true of the audio-visual activities as of any other part of the school program.

The school administrator must ensure that audio-visual materials are making their maximum contribution to the instructional program. An administrator's attitude toward the media, and clues to his opinions, will be evidenced by his answers to the foregoing questions. ■

Current research in audio-visual media will influence future instructional technics, selection of facilities, professional training, and plant design

Several researchers in the audio-visual field have supplied The Nation's Schools with brief reports of their projects or experiments. The following summaries explain purposes, methods and findings.

Teachers and Students Learn Language Together

Using a grant from the U.S. Office of Education under Title VII of N.D.-E.A., three faculty members of the University of Illinois are conducting this research project. They are Charles E. Johnson of the elementary education division of the college of education, Fred P. Ellison of the department of Spanish, Italian and Portuguese, and Joseph S. Flores of the department of Spanish and Italian.

A search for a procedure to be used by an elementary teacher in teaching a foreign language he himself does not know, using audio-visual technics, is the purpose of this research. The researchers also are attempting to evaluate the devised procedure by comparing its effectiveness with that of a more conventional approach to foreign language instruction that uses specialist teachers.

Five classrooms of children averaging 25 per classroom are involved in the study.

Two classes are being taught by specialist teachers of Spanish using procedures, materials and equipment suitable in situations in which the teacher knows the foreign language. Children in two other classrooms — comparable to the first two groups in mean chronological age, mean I.Q., and distribution of boys and girls — are being guided by teachers unfamiliar with the Spanish language. These two groups are taught by procedures involving the use of closed-circuit TV and tape recordings prepared by language specialists and spoken by natives. Once each week these children receive instruction by TV, and on the remaining days instruction is handled by tape recordings. A fifth group is one semester ahead of the others in Spanish instruction. This group provides information as to the suitability and value of particular content, materials and methods before use with the experimental groups. This group is being taught by a specialist teacher of Spanish. The groups are in their second year of the experiment.

Pupils in all groups are examined at the close of each semester on progress in learning the foreign language. Pupils in the experimental [non-Spanish speaking teacher, A-V facilities] and contrast [specialist teacher of Spanish, no A-V facilities] groups are compared to determine the extent to which the experimental groups are able to acquire equal status with those who received instruction from specialist teachers using neither TV nor recordings. Evaluation involves the use of pictorial tests, tape recordings, and individualized interviews. Scoring is done by language specialists not directly involved in the study. Statistical analysis involves the use of the t-tests of the differences in mean scores.

There are other experimental aspects, according to the researchers. For example, the project staff is collecting data concerning the effect of foreign language instruction and other areas of learning, such as: the correlates of success in learning a foreign language when speaking and listening (being given primary emphasis); the optimum age for learning a foreign language, and the extent to which teachers, who are initially unfamiliar with the foreign language they are presenting, acquire it for themselves.

FINDINGS:

At the end of the first year the contrast group (the group receiving instruction from specialist teachers) received slightly higher mean scores on the Spanish achievement test than did the experimental group. However, according to the researchers, the differences in mean scores were not found to be statistically significant.

Pupils with higher I.Q.'s tended to obtain higher scores on the Spanish achievement test than did those with lower I.Q.'s. The relationship was found to be statistically significant at the 0.01 level. There was a slight tendency for the younger pupils to obtain higher scores on the Spanish achievement test than did the older pupils, and the pupils who scored high in the achievement tests in other school subjects tended to score high on the Spanish achievement tests. In many instances the relationship was statistically significant.

Teachers A-V Course Taught by Television

"Audio-Visual Television Course" is the title of the project undertaken by Walter A. Wittich, professor of education at the University of Wisconsin.

A series of investigations is being conducted by which the general speed, tempo and effectiveness of teacher training is hoped to be moved ahead. The course planners anticipated the possibility that future training could be increased in terms of the number of teachers affected through the use of television teaching technics related to more traditional procedures. The student of the course "attended" 42 televised lessons, read a basic textbook along with supplementary reference materials, and submitted 10 written laboratory reports in which he described how newly acquired understandings of procedures in A-V education were applied immediately to day-to-day classroom teaching.

One of the procedures involved in the production of the 42 television lessons employed a teaching team.

During the fall of 1959 the team worked at the laboratories of the TV center at the University of Wisconsin, producing televised lessons which encompassed what ordinarily is offered in the college level teacher training A-V course. At the same time a 200 page course manual was produced and a bibliography compiled. In the spring of 1960 the course was presented in six television areas. Elementary teachers were enrolled for graduate, undergraduate or inservice training credit.

FINDINGS:

The questionnaire given to the teachers at the end of the course — after credit had been assigned — seems to indicate the following: (1) more than 90 per cent of the teachers believed that the television audio-visual lessons contained information of practical value; (2) 90 per cent believed that the work load ex-

pected in the course was beyond that which ordinarily would be encountered in a professional level education course; (3) 90 per cent adjudged the course to be of greater practical value than the typical education courses in which they had enrolled previously; (4) 80 per cent reported that their over-all attitude toward the televised course was more favorable than they felt toward typical education courses taken during the last five years of their experience.

Kinescope Recordings Help Student Teachers

Sponsored by the U.S. Office of Education under Title VII of N.D.E.A., Hunter College of the City of New York, and the division of teacher education of the New York City municipal colleges, this project is being conducted by Herbert Schueler, Milton J. Gold, Gerald S. Lesser, and Harold E. Mitzel.

The first phase of this project tests the use of kinescope recordings in an effort to enhance teaching effectiveness of student teachers. The second phase tests the value of closed-circuit TV and kinescope recordings as a means of observing classes in the college laboratory schools by remote control.

Over a pe.iod of three semesters, 60 elementary student teachers are divided into one control and two experimental groups as part of Phase One. All are kinescoped at the beginning and end of each semester for comparison of individual growth. In the intervening training period, students in the control group are visited five times – as usual – by their college supervisors. Students in one experimental group are filmed by kinescope and are not visited by the supervisor, while students in the second experimental group are kinescoped while the supervisor is in the room. The experimental groups view their own performances and discuss them with the supervisors.

In Phase Two a kinescope library is being developed so that six sections of a course in elementary education methods may test the use of these three methods of observation: (1) in person visiting; (2) viewing kinescopes of class activity, and (3) viewing kinescopes of class activity prepared through discussion between the college instructor and the elementary school teacher. Students in three groups will be tested in an effort to determine differential learning effects.

FINDINGS:

Students and supervisors indicate a positive feeling about the use of kinescopes in student teaching, but objective evaluation depends upon statistical analysis, not yet available.

A-V Media May Improve Teacher Preparation

With grants from the U.S. Office of Education and the Ford Foundation, James B. Tintera, associate professor of education, Michigan State University, is conducting two research projects under the auspices of the State of Michigan Television Study, of which Professor Tintera is chairman.

In Project One (U.S.O.E. grant) an analysis is being made of the ways in which the application of new communications media may improve teacher preparation, especially in such fields as languages, science and mathematics.

Project Two (Ford Foundation grant) is attempting to collect and analyze the conditions, ideas and directions in ETV that appear most promising for education in Michigan, and to develop a recommended plan or plans for a coordinated statewide effort in utilization of ETV.

Sixty-six student teachers in the elementary schools of East Lansing, Mich., were chosen and assigned at random to Project One. Twenty-two were used in each of three terms – winter, spring and fall, 1960. Each group was further divided into subgroups designated as "television," "tape" and "control." Three films or tapes were made of each student teacher in the classroom (without the teacher's knowledge of which half hour during the day) at the beginning, middle and end of the term. The films or tapes were returned to the student teacher to allow him and his supervising teacher to review and to hold critique sessions. The student teachers also were given paper and pencil tests at the beginning and end of the term. These tests currently are in the process of evaluation.

FINDINGS:

Researchers report that insufficient time has elapsed to report conclusive findings or to detect established trends.

Didactic Films Teach Better Than Discussions!

With a grant from the U.S. Office of Education under Title VII of N.D.E.A., Loran C. Twyford Jr., H. H. McAshan, and John Church of the State University of New York are conducting this research project.

Research is being conducted in order to discover which audio-visual aids are most effective in general science and mathematics instruction.

A learning profile technic is utilized to discover the relative effectiveness of various A-V aids. Thirty students turn knobs to indicate whether they think they are learning each moment of the instruction. Their responses are summarized and plotted to form peaks and valleys of instructional effectiveness. Visual aids are introduced into those instructional segments that appear as valleys. A second group of students is taught with the improved instruction, and profiles are made of this instruction. In this way it is possible to improve the lessons throughout the year, according to the researchers. Specifically prepared tests involving visual and verbal items are administered at the end of each unit in order to make a definite evaluation.

FINDINGS:

After six months of experimentation the following aids appear effective: didactic films, overhead transparencies, demonstrations and experiments. Dramatic films, introduction to films and discussions would not appear to be greatly effective. No final answers have been obtained in over-all improvement as a result of the treatment.

Teaching of Reading Is 'Enhanced' by ETV

Conducting research at the reading center of the college of education, Pennsylvania State University, is Lyman Hunt, associate professor of education. His project is supported by a grant from the U.S. Office of Education under Title VII of N.D.E.A.

Four objectives govern this research. Attempts are being made: (1) to discover if the role played by the classroom teacher in teaching reading can be enhanced through "effective use of ETV"; (2) to determine the advisability of ETV for teachers as well as for children; (3) to decide if part of the ETV effort should be directed toward the *concerns* of teachers, and (4) to determine if teachers are the "truly important persons in the educational process."

In conducting this research, Professor Hunt has emphasized: (1) the use of television "for bringing ideas to teachers"; (2) the conviction that quality reading instruction is a "highly personal matter and does not lend itself well to mass treatment and instruction," and (3) the team approach to research is desirable because "classroom teachers need to participate actively in any research that is basically concerned with teacher attitudes and practices in the classroom."

A series of fifteen 30 minute programs illustrating recent trends and approaches to reading instruction in the public schools was presented by a group of teachers. Selected portions of their reading programs were shown. The series was telecast on Saturday mornings from late January to May through the facil-

ities of a local open-circuit television station.

Participating teachers were assigned at random to one of four groups. Two groups viewed and two groups did not view the television programs. One of the viewing and one of the nonviewing groups kept notes of important occurrences in their reading program during the period of the telecast. Groups of parents were similarly involved.

Studies were made before and after the television series. Evaluation of each teacher's reading program included an observational study, a self-record of his own program, an attitude scale, and an interview relative to his reading program.

FINDINGS:

Comparisons of teacher groups formed through random assignments show highly significant differences in favor of the teacher groups who *viewed* the program series. The same holds true for the parent groups. Studies of the children's reading performance showed no difference in one teacher's group of children over another's and, in fact, this was not anticipated, according to the researchers. Professor Hunt believes ETV has been shown to be an effective way to change teacher attitude and practice insofar as reading and instruction are concerned.

They Learn Russian via ETV Alone

Under sponsorship of the U.S. Office of Education, Oakley J. Gordon, associate professor of psychology, University of Utah, is conducting the research described here.

Russian is being taught via ETV to "superior" elementary pupils at the end of the school day. The researchers are hypothesizing changes in certain behavior in the regular school classroom; however, there is an additional hypothesis concerning the relative effectiveness of teaching Russian by television *versus* the live instructor.

Three days a week Russian is taught in 12 classes. Eight of these classes consist of pupils of superior intelligence who receive only televised instruction. Another two television classrooms contain a heterogeneous group of average and superior pupils. The remaining two classes consist of superior pupils who are being taught by a live instructor in the classroom. Each of the classes contains approximately 30 pupils.

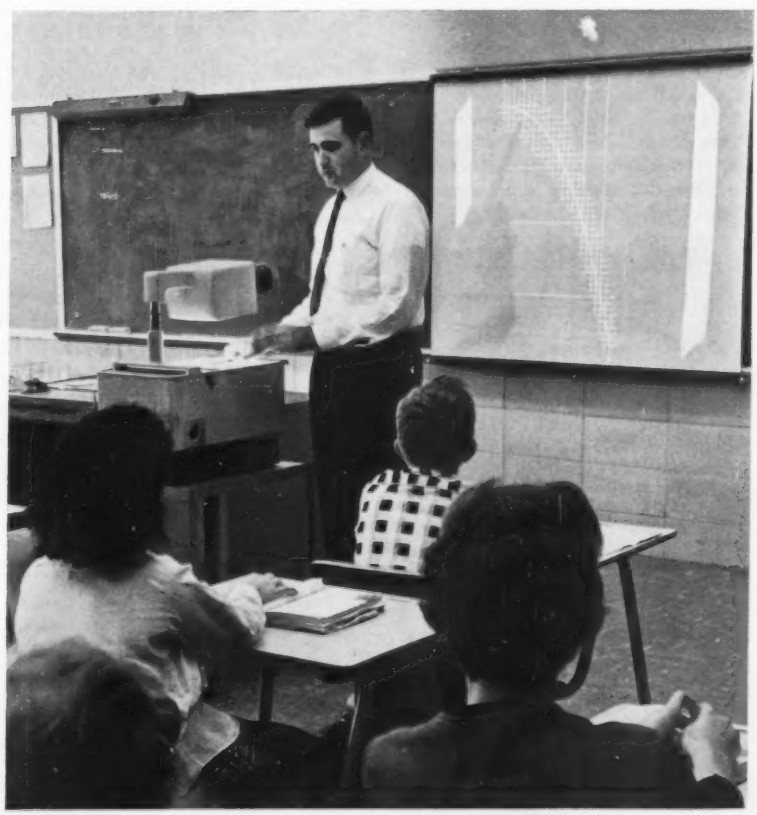
There are, in addition, two control groups of superior pupils who are not studying the Russian language.

All of the pupils participating are being measured periodically in their socio-emotional adjustment to school and on their academic achievement in regular classwork. The pupils enrolled in Russian also are being measured on their interest and achievement in the Russian course.

FINDINGS:

Based on the results of the first year of this three-year experiment, the following trends seem to be indicated:

1. Superior pupils studying Russian continue on the whole to do well in their academic and socio-emotional behavior in their regular classwork.
2. The superior pupils are learning Russian well, and those who do particularly well in the language tend to gain in certain aspects of socio-emotional behavior in their class situation as well.
3. Pupil interest in Russian via television dropped off at the end of the year.
4. Conducting this Russian course at the end of the regular school day has caused no serious problems to school or family activity as far as can be determined.



OVERHEAD projector is used by junior high school instructor in North St. Paul, Minn., to show a graph he has prepared to illustrate effect of gravity on object rolling down incline. A pencil is used as pointer to retain student attention during discussion.

Student's ETV Attitude Depends on Teacher's

Under sponsorships of of the Maine State Department of Education with support of funds granted by the U.S. Office of Education under Title VII of N.D.E.A., Joseph J. Devitt, chief, bureau of secondary education, Maine State Department of Education, is conducting this research project.

Researchers are attempting to develop and evaluate an economical and practical method of providing intellectual stimulation to gifted students in small secondary schools through a televised instructional program.

Each school morning two half-hour courses are presented on a television network that reaches about 90 per cent of Maine's high schools. Both are full-year courses carrying one unit of high school credit. Neither duplicates the content of courses taught in the schools.

Participating students are divided by schools into four groups. One has the televised program plus the resources of its own schools. A second group has the services of assistant teachers who visit

(*Continued on Next Page*)

the schools biweekly and give personal aid. A third group does not receive the services of visiting teachers but instead participates in a three-hour seminar for students from near-by schools, once a month. The fourth group has all three services.

Each student has two basic college level textbooks, access to a small reference library and mimeographed study guides. An extensive standardized testing program is provided at the beginning and at the end of the school year, and mimeographed achievement tests are prepared monthly by the project staff.

FINDINGS:

Definite conclusions will not be published until next summer when data will have been analyzed statistically. Tentatively, however, researchers believe that in states having secondary schools so small that it is not practical to develop courses that challenge superior students effectively, televised courses can help to meet this need and can do so economically. Attitudes of the students toward the televised courses reflect directly the attitudes of their teachers, the researchers maintain. If the teachers question the value of the program, the students will be indifferent and will profit little from participation. If the teachers are enthusiastic, the students will work well and will adjust readily to this new medium, the researchers believe.

Monthly objective test results seem to indicate that students with television only do as well as those with the supporting services.

'Self Study' Pattern Produces Skills

Designated N.D.E.A. Project 079, this research is being conducted by G. M. Torkelson, chairman, instructional materials, college of education, Pennsylvania State University.

Four principal objectives govern this research. Efforts are being made to determine: (1) the best pattern or patterns for preservice teacher preparation in audio-visual education; (2) the effects of "saturation" upon pupil learning; (3) the effects of "saturation" upon continuing teacher use of audio-visual materials, and (4) the limitations to the use of audio-visual materials in public schools.

Research is being conducted in two phases. Phase One involves teaching "audio-visual education" by four methods over the span of four semesters. Methods are: (1) a *separate* course; (2) an arrangement where A-V course content is integrated in the general and subject matter courses in secondary and elementary education; (3) an arrangement where the A-V course content and skills are taught on location while students are doing their practice teaching in public schools (this involves both secondary and elementary student teachers and also involves adding equipment and materials to certain centers to test effects of "saturation"); (4) a "self-study" pattern where content and skills are learned by the students exclusively through the use of locally and commercially produced A-V materials.

Phase Two of the experiment will involve two years of follow-up in which persons who have participated and who have graduated will be visited in their first teaching positions. They will be observed for teaching procedures and will be asked to assess the value of the pattern by which they were prepared to use audio-visual materials. They also will be asked to identify what they considered to be factors in the school system that inhibit and/or promote effective use of instructional media.

FINDINGS:

The "self-study" pattern would appear to have real potential in teaching skills such as are required in the operation of projection and sound equipment, according to present findings. The researchers believe that this may have value in preservice and inservice training programs where the learning of equipment operation is necessary. ■

REPRINTS

of this school administration study on audio-visual tools of learning (48 pages) are available at 35 cents each in quantities of less than 200 and 30 cents each if more than 200 are ordered.

DICTATING MACHINES commonly seen in business offices can be adapted for many uses in the classroom. In this scene at Long Lots Junior High School, Westport, Conn., pupils are recording their panel discussion for future review and criticism. Equipped to provide sufficient volume of sound, these machines can be used to present lessons previously recorded by the teacher. Through exchange of discs, records, belts or tapes, teachers can communicate with others who become sources of information to be heard in the classroom.

School Lunch

The newer media can spark interest in nutrition education. These nine suggestions, applied to the lunch program, go beyond verbal symbols

FAITH W. CHALMERS

School Lunch Director for West Virginia

IN VARIOUS fields, the current emphasis on audio-visual materials has provided enrichment for all types of learning experiences. Too often, in the field of nutrition education, we rely chiefly upon textbooks to provide needed background information. Well chosen audio-visual materials, when used, help provide the "spark of interest" needed for effective school lunch programs. Care should be taken, however, in the selection of such materials. A-V aids never should be used as a substitute for effective teaching.

In selecting or preparing an audio-visual aid, we must consider first the purpose for which it is to be used. One or two illustrative materials carefully selected for a specific purpose are more useful than a wealth of material that fails to meet the needs and interests of the group.

In all cases some type of criteria should be developed before audio-visual materials are selected or prepared.

The following questions or criteria might be used in selecting or preparing audio-visual materials:

1. Does it serve a purpose?
2. Does it tell a story or illustrate a specific point?
3. Does it arouse interest or attract attention?
4. Is it easy to use, to store, or to transport?
5. Is it easy to read and to understand?
6. Is it based upon accurate, factual information?
7. Is it worth the time or expense involved in its purchase or preparation?

Sources of Audio-Visual Materials. Various types of audio-visual materials are available from different sources. Many have been prepared by experts in the field of nutrition education and should not be overlooked. Some of the most outstanding have been listed in a publication of the American School Food Service Association, "Selected School Lunch Audio-Visual Aids."[1]

"School-Made" Audio-Visual Materials. The most valuable audio-visual materials are those that have been developed in one's own school or community. These may not always have the professional appearance and artistic appeal of a Hollywood production, but they have other values that offset this lack – they have been prepared to meet local needs and interests; they will attract attention and arouse interest; they have been prepared in the classroom from materials available locally; they may be adapted easily for use in other schools and communities.

Whenever students become involved directly in developing nutrition education materials to be used in the classroom, school lunchroom, school assembly programs, or local community programs, a more active interest in nutrition is aroused and more actual learning takes place. In schools where classroom projects have been developed and used effectively in the school lunchroom, a noticeable improvement in food habits generally is observed.

One convenient device to use when thinking of A-V materials for the school lunch program is Edgar Dale's "Cone of Experience."[2] We believe that school lunch personnel is in the *habit* of providing direct, purposeful experiences for pupils, teachers, cooks and helpers; likewise, the personnel is *accustomed* to verbal symbols.

According to Dr. Dale, symbols (words, ideas, formulas and so forth)[3] often fail to communicate the concept desired. He has listed nine technics for A-V communication that go beyond the verbal symbol. For the school lunch program these suggestions are applicable as follows:

1. Contrived Experiences. Materials used to furnish contrived experiences are models, mockups, objects and specimens. These may be used to help pupils and parents "explore" the kitchen and its activities (without having a lot of people in the way) and to help them know what a "germ" looks like by using an enlarged model. Specimen trays of a well balanced diet can be displayed. A cut-away model of a range, freezing compartment, or other piece of equipment may help cooks and students in learning the proper care and maintenance of this expensive equipment.

(Continued on Next Page)

[1]Wisely, Katherine Connelly: Selected School Lunch Audio-Visual Aids. Philadelphia: American School Food Service Association, 1958, 1960.

[2]Dale, Edgar: Audio-Visual Methods in Teaching. New York: The Dryden Press, 1954, Pp. 42-56.

[3]Ibid: p. 53.

2. Dramatized Experiences. Use of plays, puppetry, sociodrama and role playing can help to answer the following questions: How do the pupils react? How do the cooks react? How can they learn how to act? What *are* they thinking? What if vitamins, minerals and carbohydrates could talk?

3. Demonstrations. Make use of apparatus, chalkboards and feltboards. Consider the tremendous potential of the chalkboard and feltboard in building answers to these questions: How do I choose foods? What diet suits *me* best? Why worry about nutrients?

Interest can be created by demonstrations in how to prepare and cook foods with low nutrient loss; how to correlate the school lunch program with the instructional program; how to balance diets and dollars.

4. Field Trips. Field trips can help the school lunch director (and the pupils, cooks and teachers) learn about the "inside workings" of the local canning factory, the local meat packer, the local wholesale distribution center, the local dairy, or the local bakery. These visits can be related to present and future needs, and they can develop an appreciation of the tremendous responsibilities of the manager of a school lunch program.

5. Exhibits. Make use of school-made displays, bulletin boards, and posters. Keep a regular school lunch bulletin board. Get pupils to help. Evaluate it often. Make use of pictures and color. Use motion pictures if possible and appropriate. There are dozens of free and inexpensive posters available. Pupils can create others and their creations often are startlingly good, appropriate and attractive. Have a contest for the best display by awarding a cake or something "extra-special" as a prize.

6. Closed-Circuit Television. Let the pupils, parents, teachers and principal see and hear what goes on in the school kitchen — how every move made there is aimed at providing better, tastier, more attractive meals.

7. Motion Pictures. Movies help to give pupils a chance to project themselves into real-life or staged experiences that might help them with table manners, food selection, and cleanliness. And movies can help children find answers to: "How do *I* behave at the table?" "How does one say 'grace'?" "What happens to my food after I eat it?" "Where did all this food come from?"

8. Still Pictures, Radio and Recordings. Make use of photographs, illustrations, filmstrips, slides, opaque projectors, phonographs and radios. Use these to brighten and quiet the lunchroom, to illustrate answers to questions, to build desired reactions, and to "make a point."

9. Visual Symbols. Use such materials as flat maps, chalkboards, sketches, cartoons, comic strips, diagrams, charts and graphs. Use these in conferences, in planning sessions, and in discussing diet, nutrients, nutrition and sanitation. Use these in illustrating methods, manners, means and costs. ■

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Disagree on Public School Liability, But Half Would Require Insurance

AS A matter of ethics, school districts should not be held liable for property damage or personal injuries, believe 58 per cent of the administrators responding to February's opinion poll. Nor should school districts be required to carry insurance covering such liabilities, according to 50 per cent of the respondents.

One group pleaded immunity from liability for schools. "No tax supported institution should be held liable for property damage or personal injuries." (Mich.) Going further, a Pennsylvania schoolman said: "To permit the tax [gathering] agency to be sued by its constituencies is a part of the economic mal-thinking of our age."

One official contends that "the insurance companies will be the only people to gain" if schools do not "maintain the theory of governmental immunity."

"The vulnerability of a public body is so great that I cannot believe it should be placed in a position of liability," commented a Californian.

Concern About Cost

Getting off the subject of ethics, some participants were concerned about the cost. Here is what an Iowa superintendent said: "It would open up a mess of sue, sue, sue for every little thing. Costs would be exhorbitant." An Illinoisian is afraid "there won't be enough money left to run the schools." Another Illinois respondent is against "spending money for anything other than instruction or items necessary for instruction."

Other respondents maintain that schools should not be held liable for property damage or personal injuries because "there would be too many unjust claims" (Pa.); "this could lead to a claims-conscious people and much confusion" (Mo.); "a whole new avenue of administrative problems arises" (Idaho).

Negligence on the part of school districts is one aspect of liability mentioned by parties on both sides of the question. A "spokesman" for those who believe schools *should not* be held liable added, "*except* in cases of proven neglect." A group of those who believe that school districts *should* be held liable said, "*if* property damages or injuries are a direct result of negligence."

Forty-two per cent of the respondents believe that school districts should be held liable. The main argument given in this camp is that school districts have the same obligations as do other corporations. A Wisconsin superintendent remarked: "It is neither ethically correct nor morally proper that businesses – schools – that have millions of people under their control should not be held responsible for their acts."

Districts Have Obligations

"It would appear to me that school districts have the same obligations to patrons as commercial institutions have to their customers." (Iowa.)

Others implied that the knowledge of the fact that school districts would be held liable will develop conscientiousness for public safety on the part of school people. A New Jersey respondent said "maintenance of buildings and property would probably improve."

In favor of holding schools liable are a few respondents who called for restrictions on insurance coverage. "There should be some way to limit liability to a reasonable amount to prevent excessive and unreasonable claims," said a Washington schoolman.

School districts should not be required to carry insurance covering liabilities, believe 50 per cent of the respondents. Some objected to the word "required." Said an administrator from Illinois: "I think that school districts should carry some insurance for their own protection; however, I don't think it should be required."

"If liability is established, and thus the possibility of suit is present, districts must protect themselves with insurance," declared a New Hampshire schoolman. Others contend that insurance coverage would be a necessity if school districts were liable, despite their feeling that ethically they should not be.

"As long as insurance is available, the incidental premium is secondary to protecting the public," reasoned a Michigan official, who is one of the 49 per cent believing districts should be required to carry liability insurance.

"As long as the public requires schools to operate bus lines, cafeterias, community recreation centers, and other things not essentially academic or educational or formerly considered a school duty, protection should be afforded the recipient of service *and* the public! (Ill.)

"We all realize that juries and some courts tend to provide high damages. Therefore, insurance coverage should be provided to protect districts," said a Pennsylvania administrator.

There was no hesitation from this Alaska respondent, who wants compulsory insurance, "since everyone sues at the slightest opportunity." ■

OPINION POLL FINDINGS:

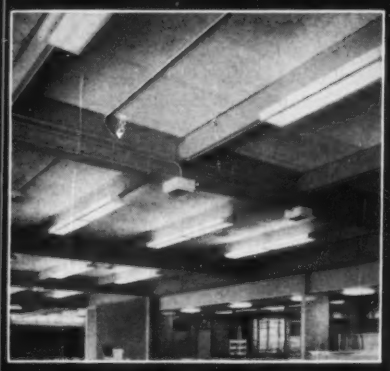
1. **As a question of ethics (regardless of your present state statutes) do you believe that school districts should be held liable for property damage or personal injuries (tort)?**

   Yes . . 42% **No . . 58%**

2. **Should school districts be required to carry insurance covering such liabilities?**

   Yes . . 49% **No . . 50%** **No opinion . . 1%**

Based on a 4 per cent proportional sampling of 16,000 school administrators in continental United States, this survey brought a 48 per cent response.



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Satisfactory Pay Should

IN THIS, the fourth, round-table discussion, the following Arkansas superintendents participated: Chris D. Corbin, Fort Smith; Garland A. Stubblefield, El Dorado; J. A. Trice, Pine Bluff; Wayne H. White, Fayetteville. A. W. Ford, state commissioner of education; Forrest Rozzell, executive secretary, state education association, and J. H. Wasson, director of supervision, state department of education, also participated. Calvin Grieder ("Administrator's Clinic") of The Nation's Schools served as moderator, and Arthur H. Rice, editor, as interrogator.

FORREST ROZZELL: I want to sound off on merit rating. I find it rather difficult to take issue with the alleged *purpose* of merit rating: to identify superior teachers and pay them accordingly. However, I know of no school district in America where conditions are such that merit rating actually *realizes* that purpose. The grand strategy of the moment for merit rating is to develop a technic by which certain groups seek to avoid the inevitability of increasing tax support for education – a technic for dividing inadequate funds among teachers.

Merit rating is just a way to avoid tax increases

If we could establish a salary schedule in Arkansas beginning at $6000 and then, over a period of years, provide for increases to $12,000 and say that anyone who meets the qualifications for teaching is entitled to this range of salary, then I would have no objection to setting up a merit system to pay superior teachers over and above that amount – even if some subjective criteria were used. But that situation doesn't prevail in Arkansas, and it doesn't prevail in any place we've mentioned in our discussions.

Maybe a crude analogy can be made to medicine. Certain minimum qualifications are required for doctors to perform appendectomies, tonsillectomies and so on. But if you want someone *superior* – a specialist in surgery – then you pay more for merit. You're paying for merit!

WAYNE H. WHITE: I don't agree with the statement you made, Forrest, on what is back of the movement for merit rating. I've spoken with a lot of people who favored merit rating and who were not concerned with cutting taxes. But the objection *I* have to merit rating – and the objection I've heard our teachers express more often than any other – has to do with measuring teacher effectiveness. Is rating to be done arbitrarily?

The best teachers we have are those who would benefit from merit rating if we had it, but they probably are more opposed to it than anybody else.

ROZZELL: I don't care where you go – any community will do – and you might find the highest salary schedule in the nation, but it's not enough. We are facing the inescapable need of making teaching *the* pre-eminent profession. And that was my thought when I was talking about $6000 to $12,000 in *Arkansas*. There'll be some communities where the annual base schedule will have to be from $10,000 to $20,000, to make teaching the pre-eminent profession.

Precede Merit Rating

CALVIN GRIEDER: What you're arguing for is a much higher salary structure as a whole – before we even begin to think about merit.

ROZZELL: That's right. In the U.S. today the average salary for teachers is about $5000. In order to make teaching a pre-eminent profession that amount should be doubled. Then I'd be willing to consider merit rating *over and above that*.

Higher salary level should come first

RICE: The argument I get as I interview administrators is that their boards support higher salaries for teachers on a merit plan because they believe the teachers who are *more deserving* are being paid proportionately. But school boards are unwilling to pay everyone $10,000 a year.

GRIEDER: How many teachers are *worth* $10,000 a year?

ROZZELL: Well, I'd say this: Within the context of the American economy, with our ability to produce, and in terms of the responsibility that rests upon teachers, and even with the limitations of our present methods of financing education, teaching is worth an average of $10,000 a year.

GRIEDER: I don't think there are a great many teachers worth $10,000.

ROZZELL: The low level of salaries is not the only thing that makes me oppose merit rating. I have no objection to merit rating if or when conditions are such that we're actually talking about superior competence and paying for superior competence, rather than using a merit plan as a gimmick for dividing inadequate salary funds.

G. A. STUBBLEFIELD: The trouble is, I think, that teachers don't have confidence in present methods of measurement.

He who rates is in trouble

One of the main reasons that merit rating won't work at present is that it actually is contrary to our philosophy of local control. What I mean is this: Suppose you adopt a merit pay plan in your community; then suppose that there is one teacher who, according to your measures, isn't rated high enough to get an increase in salary. Now between 30 and 60 parents of that teacher's pupils may think she's the best teacher they ever heard of, and they're going to be concerned about her rating, and they're going to battle about it. Then you've got a fight on your hands right in your own community.

I think right there is one of the main reasons that merit pay plans won't work – control is located in the local district. Whoever does the measuring or rating is going out on his neck, unless you have some other sort of control where people can't get to him.

A. W. FORD: Yes, that's the basic reason why I think the objection to merit rating is valid. In America we have local control of education, and merit rating is not practical with local control. If we had a national ministry of education, which we don't want, it might work.

STUBBLEFIELD: Decisions are made too close to home.

'Parents may insist that their child's teacher receive a good rating. Pressures on the board of education to that effect will amount to an encroachment on local control'

GRIEDER: How would it encroach on local control? I still don't see that.

STUBBLEFIELD: Through pressure. You get the parents disturbed. Parents will say: "There's the teacher of my child; he's a good teacher and I know it, and I think he ought to have this additional salary. You're doing him an injustice when you don't allow it. I'm going to the school board and see to it that justice is done."

At the next meeting of the board there'll be between 30 and 60 parents. They'll walk into that board meeting and put pressure on the board, and the board members are going to reverse their decision under the circumstances.

FORD: I want to tell you what one of the state's most prominent men said. "I don't see, Mr. Ford," he said, "why you and your group can't select the best teachers. Everybody downtown knows who they are. I haven't been in this community too long, but I think I know, and I believe everybody else knows." And he added, "I think the objection to merit pay is *administrative*," which is really what we are admitting here. I just wonder if that isn't the real objection. It's the difficulty of administration and fear of pressure that will be hard to cope with.

Objection to merit pay is 'administrative'

CHRIS D. CORBIN: Suppose you have an elementary school with two first grade teachers, and you rate one of them as a superior teacher and the other as a mediocre teacher. Which teacher does everyone want for his child? Everyone wants his child assigned to the superior teacher's room – and you have an untenable situation. You can call that "administrative," as Mr. Ford just did, or whatever you choose. Perhaps it *is* administrative, but it is difficult to handle.

JAMES H. WASSON: There seem to be two points of view from which merit rating is considered. The people who largely advocate merit rating are business leaders in private institutions. Now if you had a private school, you could do this sort of thing. But in a public institution you've got all sorts of pressures and problems.

More than 100 systems have merit plan

GRIEDER: I think you gentlemen are overlooking the fact that there are more than a hundred school systems that *do* operate under one or another form of merit plan, and nobody there seems to be going out on his neck.

CORBIN: At the A.A.S.A. meeting last year, I served as chairman of a discussion group at which a member of our panel was also a school superintendent. He reported that his school system had a merit pay plan and that the beginning salary in the system was $6000. He was not troubled by a shortage of teachers. (Incidentally, two of his teachers were present at the discussion.) However, in discussing the matter with him after the meeting, I received the

impression that he *did* have a salary schedule. He apparently had a beginning salary and a top salary with steps in between. He worked teachers in on the basis of experience and training, and, to a degree, on performance. He said he had not been involved in the kind of trouble referred to by Mr. Stubblefield.

JOHN A. TRICE: I think it is wholly unrealistic for us not to do something about merit rating. The difficulties in it are no reason for not looking at it. This is a highly competitive society, and I think we are being unrealistic when we take competition out of the teaching profession.

Now there are certain objective factors on which merit rating (I like some other terms better) can be based, but I think where it has broken down most is where the rating is done in an authoritarian manner. I think everyone concerned, including the teacher, needs to be involved in the rating. And you must have criteria and principles which control how it's going to be done, and these must be well known.

And Chris, I don't think you have to announce to the public that Miss So-and-So has been at a certain school eight years and has a master's degree and is going to get such-and-such a salary. You don't single people out; you take care of these factors in your schedule. I think we are being a bit unrealistic when we exclude evaluation from teacher personnel administration. We use evaluation everywhere else. There are some problems, certainly, but I don't think we ought to turn our backs on evaluation of teaching, and I never have agreed with any other stand on it.

Actually, of course, we do carry on merit rating to a great extent. That's where we get our department heads and our principals, and so on. We are "promoting" those who have outstanding ability. I'm sure other school systems do it too, and also, to some extent, by assigning extra duties and extra responsibilities, summer work, and the like, for additional pay.

Competition aspect is desirable

GRIEDER: In *teaching* there is literally no way to be promoted unless you change your career. The worst teacher, the best, the youngest, the oldest, the brightest, and the dullest – they're all called "teachers." And you can't promote a teacher in the absence of evaluation. That is one difference between public school teaching and college teaching.

STUBBLEFIELD: We have a kind of seniority in school teaching, too, but college teaching is a different kind of work. I don't believe you can treat the two as the same kind of work.

ROZZELL: I would like to make one generalization which I think is applicable. The merit rating plans that have proved to be satisfactory have all been superimposed on what the teachers in those districts have considered defensible salary schedules. The "merit" part went on top of the otherwise satisfactory schedules.

When you have what the profession regards as a defensible schedule, then you don't get these local pressures that have been pointed out.

GRIEDER: That's a very important point. We have run into the same problem in our university merit plan. The faculty is concerned with raising the basic salary structure to a satisfactory or defensible level before much weight is given to merit in allocating funds for salary increases.

Training has effect on salary. Merit should, too

TRICE: We don't fail to include certain other factors in salary schedules merely because the money is low, or because we don't have "adequate" funds. We do put in such factors as degrees and length of service. I believe that a factor of merit also should be included. Raises are based largely on degrees and experience, because in theory persons with the highest degrees and the most experience become better teachers. But we all know that some do and some don't. And that is where an additional factor related to merit deserves consideration. ■

Next month: Pressures on the Superintendent.

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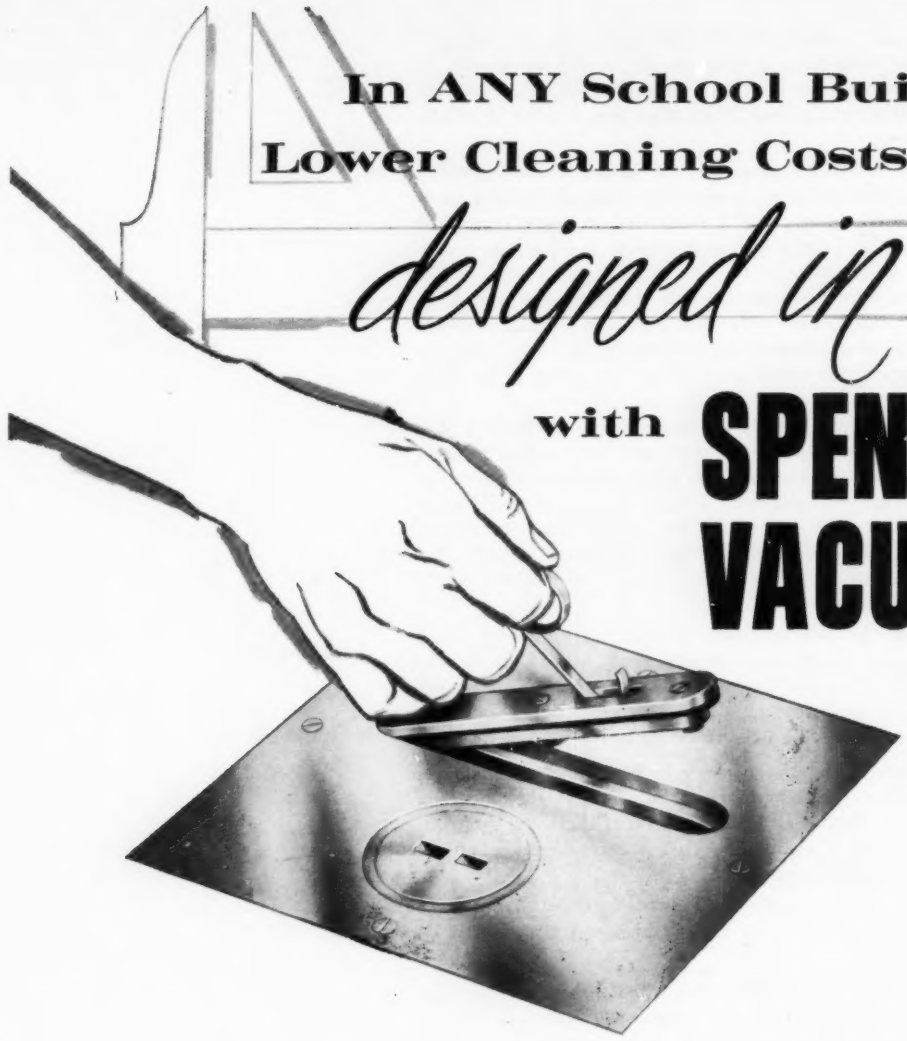

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Growth Through the War Years

LEO E. BUEHRING

Part I of this three-part article told how the Associated Exhibitors of the National Education Association was "born in protest" to exhibiting conditions that prevailed at the 1924 convention of the Department of Superintendence of the N.E.A., predecessor organization to the American Association of School Administrators. The gradual change in the attitude of school administrators toward the exhibitors during the following 12 years and the evolution of the exhibitors from "pamphlet peddlers" to "partners in educational progress" were outlined. Historical highlights were traced back to 1936, by which time the merchants of the tools of education had achieved "some mutual status." This month's article continues the story of the Associated Exhibitors — before, during and following the war years.

IT WAS in New Orleans, in 1937, that the Department of Superintendence of the National Education Association voted to change its name to American Association of School Administrators. It was at this meeting, too, that Homer W. Anderson, then continuing chairman of the N.E.A. committee on exhibits, was quoted as telling the Associated Exhibitors' membership:

"Your interests are our interest. . . . Exhibits are one of the most valuable parts of the convention . . . are of great value to education. Exhibitors are performing a service for those attending the convention."

In a meeting with representatives of the group, A. L. Threlkeld, president of the Department of Superintendence, suggested that exhibits be planned on an ever more functional basis to "get something over to the superintendents." The joint committee on exhibits was directed to continue its work.

At the 1937 meeting, also, Paul L. Crabtree,* 1935-36 president of the Associated Exhibitors, was drafted as secretary-treasurer. He retained this position for 22 years — until 1959, when he was succeeded by Roger M. Warren. Crabtree then was named secretary emeritus. He died in late 1959.

As a social aside, it is noted that at a 1937 directors' meeting a committee was appointed to "take charge of the girls (teachers) to act as dancing partners furnished by the schools" for the convention ball. "An assembly room for these girls has already been arranged."

In December 1937, the board of directors agreed "that nonalcoholic fruit punch and regular cocktails be served at the reception preceding the banquet in Atlantic City next March."

The Associated Exhibitors' membership stood at 152 firms.

Failure of the public address system and experience with overcrowded conditions at the 1938 annual banquet initiated discussions on finding a different form of entertainment.

Banquet discontinued. The 1939 convention of the A.A.S.A., held in Cleveland, saw several departures from traditional procedures. One change was the setting aside of an entire evening general session for an auditorium-type entertainment program to replace the annual banquet and grand ball. The latter program, which had been arranged and paid for by Associated Exihibtors for 14 consecutive years, had come to be regarded as the social highlight of the conventions, and many of the memories of older members are identified with these occasions.

Change to an auditorium-type program was necessitated by the inability to find facilities which would accommodate all 10,000 administrators attending the convention and by the resulting embarrassment to exhibitors at not being able to furnish an adequate number of tickets to all schoolmen who desired them.

The new program plan permitted the Associated Exhibitors to entertain for the first time all school administrators in attendance. When the program developed into somewhat of a speech marathon, members nevertheless agreed to repeat it in 1940, although "some changes should be made in regard to the refreshments served prior to the official dinner on entertainment night, and every effort should be made to have the next entertainment on a high level and shorter than the Cleveland entertainment."

*Full-term, not full-time. Paul L. Crabtree, Stanley R. Clague, and James O. Bengston, pictured on Page 46 of the January issue, were the first full-term, not full-time, officers of Associated Exhibitors after its incorporation.

Express appreciation. Ever since 1939 the officers and directors of Associated Exhibitors have planned and staged the entire auditorium-type entertainment at the annual A.A.S.A. convention "as a dignified and ethical way for association members to express their appreciation for the opportunity of serving the nation's schools." The organization has spent from $15,000 to $25,000 annually to provide top-grade musicians and entertainers for the school administrators.

Since the affair now is a general session, it is open to all badge wearers, although orchestra seats are reserved and assigned on the basis of complimentary tickets furnished by Associated Exhibitors' members. Receipts from subscriptions to these tickets finance the entire program.

Two highlights of each exhibitors' program are the presentations of the American Education Award and the S. D. Shankland Memorial scholarships.

In keeping with tradition, plans have been made for three exhibitors' programs of prestige entertainment at the final 1961 general session in each convention city – San Francisco, St. Louis, and Philadelphia.

Register on Sunday. Another 1939 innovation was to keep the exhibits open during Sunday registration hours. In answer to some criticism of this procedure without prior discussion at an annual meeting, a membership poll showed that more than eight-to-one favored continuing this practice. The question for future conventions was "left to officers and board of directors, to be guided by their own best judgment and the vote result shown at this meeting."

"Each year our members as a group are being held in higher esteem by the A.A.S.A.," Harry Grubbs, president of the Associated Exhibitors, told the representatives in Atlantic City in 1941. He envisioned the exhibits as "tools of education."

War threatens. Despite the forebodings of imminent war, preparations continued for the 1942 A.A.S.A. annual meeting, which was scheduled for San Francisco. As late as Oct. 22, 1941, Associated Exhibitors' Secretary Crabtree reported he anticipated possible help on the entertainment program from the Hollywood movie industry.

After the bombing of Pearl Harbor on Dec. 7, 1941, a change to a more central convention location was discussed. However, the convention *was* held in the auditorium of San Francisco's convention hall on Feb. 21 to 26, 1942. While exhibitors in considerable number made only token appearances (they could not promise prompt product delivery), 64 per cent of the Associated Exhibitors' membership was represented and responsible for 111 of the total 171 exhibits shown.

Elliott C. Spratt was elected wartime president.

Convention canceled. In regard to the proposed 1943 A.A.S.A. convention in St. Louis, it was suggested that exhibitors reduce their personnel just enough to demonstrate properly their products and man their booths. There was to be a space in the center of the exhibit lounge for the sale of war bonds and stamps. About 865 firms rented space.

The 1943 convention never materialized; it was canceled on the advice of the Office of Defense Transportation. At the annual Associated Exhibitors' membership meeting, held in Chicago, the directors, President Spratt, and the other 1942 officials were "frozen in office" until the next convention.

That year the A.A.S.A. published a 64 page report on the convention that was not actually held. Also, a "convention of the air" was broadcast.

Homer W. Anderson, perennial chairman of the N.E.A. exhibitors committee, was president of the A.A.S.A. in 1942-43.

First "regionals" held. With war conditions making a 1944 national convention impracticable, the A.A.S.A. held five regional conferences that year – in Atlanta; Chicago; Kansas City, Mo.; New York City, and Seattle. Exhibit space was arranged only in Chicago and in New York City. Entertainment reverted back to banquet programs. The 20th anniversary annual membership meeting of the Associated Exhibitors also was held during the New York conference.

The newly elected Associated Exhibitors' president, John J. Krill, in his first letter to the membership, anticipated "what is coming in the postwar era." Directors emphasized that the regional meetings should be considered a temporary expedient, since "regionals would be a real threat to A.E. members."

At the 1944 A.A.S.A. conferences, Worth McClure, superintendent of schools at Seattle, A.A.S.A. president in 1942, and executive secretary of the A.A.S.A. from 1947 to 1955, presided as A.A.S.A. president for the second time.

Plans unrealized. In view of the successful 1944 regional meetings, plans were made for similar A.A.S.A. gatherings at four places in 1945. There was to be an Associated Exhibitors' banquet in Chicago and a theater program in New York's Manhattan Center Opera House. Entertainment tickets were distributed to members; however, at the last minute the A.A.S.A. announced cancellation of the 1945 regional meetings, "agreeable to Byrnes' directive." To cover "convention" expenses incurred by the Associated Exhibitors since the previous spring, most members allowed the association treasurer to retain 15 per cent of refund due on the unused entertainment tickets.

A proposal to present the Associated Exhibitors' American Education Award to the armed forces had been dropped "because of the red tape involved and the inability to determine which person could properly accept the award."

Regarding the 1945 A.A.S.A. president, N. L. "Nick" Englehardt, Associated Exhibitors' Secretary Crabtree wrote to the directors: "It was mighty nice to find the new president exceedingly friendly and desirous of cooperating with our association to the fullest extent. Most of you can remember, not so many years back, when that was far from being the case and when every meeting turned out to be a battleground."

At the annual membership meeting, held on March 7, 1945, in Chicago, officers and directors of the Associated Exhibitors once again were "frozen in office" for a year. In his annual report President Krill expressed the hope that the officers would "be able to carry on in a normal manner and make our full participation in the convention which we certainly hope will be held in 1946."

That hope was realized only in part.

Conventions resumed. The end of the war did not bring the immediate

(*Continued on Page* 134)

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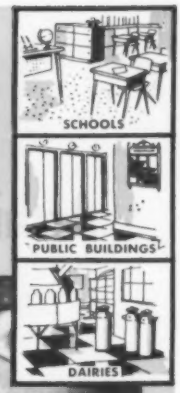

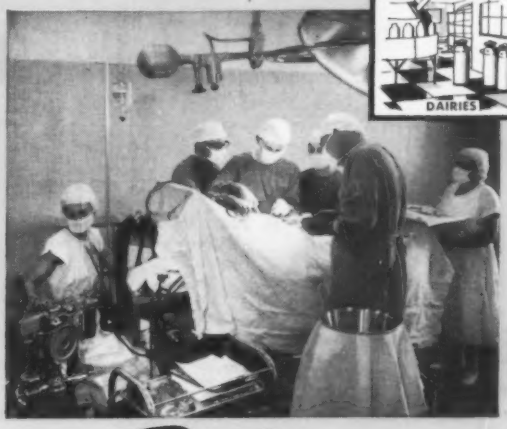

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Architects Can Recover Under Abandoned or Illegal Contracts

LEE. O. GARBER
Director, Educational Service Bureau, University of Pennsylvania

MARSHALL J. TYREE
Assistant Professor, Department of Education Paterson State College, Paterson, N.J.

MUCH of the litigation involving architects and school districts revolves around the question of the right of the architect to recover. The authority of the architect is, largely, contractual. From this it necessarily follows that, generally, there can be no recovery in the absence of a contract[1] or in the case of an illegal contract.[2]

In New Mexico, for example, an architect submitted plans for a building and, without being requested to do so, he also submitted alternate plans. When the board found that the building for which it had asked him to submit the plans could not be constructed for the amount it had mentioned in its contract with the architect, it decided to advertise for bids under the alternative plans.

Voluntary Alternate Plans. When the architect sued to recover a fee because the board decided to construct a building making use of one of his alternates, the court denied recovery.[3] It held that his action in submitting alternates was purely voluntary, and the fact that the board submitted the alternate plans to contractors for bids did not create a contract in writing with the architect as required by statute.

In Oklahoma, the court, in refusing recovery to an architect who had contracted with individual members of the board, rather than with the board itself, and on Sunday, said: "It is very clear that there never was a contract made. Boards act as boards, not as individuals, and especially on the Sabbath day."[4]

Again, in California the existence of a contract was questioned. A board caused a notice to be published requesting plans and specifications for a proposed addition and extension to an existing high school building. The plans of one Harris, an architect, were accepted by the board. At a subsequent meeting, by action of the board, but without a formal motion, the minutes were amended by inserting a statement to the effect that acceptance was conditional upon modifications of the plans. Then a motion was passed rescinding the action taken at the previous meeting accepting the plans.

This third installment in a series defines the recovery rights of the architect in the absence of a contract, or under illegal contract, *quantum meruit*, or abandoned contract.

The architect brought suit to recover, and the lower court ruled in his favor. The board appealed.[5] It contended that there was only conditional and not absolute acceptance of the architect's plans, and that there was no contract because the required modifications of the plans had not been made by the architect. However, in the absence of evidence that the board had informed the architect of the changes demanded, the court held that there was a contract and the architect could recover.

First and Second Architect. In a somewhat similar type of case, where the architect was authorized to procure plans for a building by a committee of the board, the board appointed a second architect to build a school very similar to the one planned by the first architect, who then brought an action to recover for his work.[6] The board's defense was that it had never adopted the plans drawn by the first architect and had no contract with him.

The lower court ordered a directed verdict for the school board on the ground that there was no contract. On appeal, the higher court remanded the case to the lower court and ordered it to submit to the jury the question of compensation, if any, due the architect. In so doing, it had the following to say, by implication, regarding the existence of a contract:

(*Continued on Page* 152)

[1]Vinal *v.* Inhabitants of Town of Wahant, 122 N.E. 295, 232 Mass. 412 (1919); Rapp *v.* Board of Education of City of Las Vegas, 284 P. 761, 34 N.M. 526 (1927); Windrim *v.* City of Philadelphia, 9 Philadelphia 550 Pa. (1872).

[2]Spalding County *v.* W. Chamberlin and Co., 61 S.E. 533, 130 Ga. 649 (1908); Tonini *v.* School District No. 17 of Seminole County, 8 P. (2d) 67 Okla. (1932); Windrim *v.* The City of Philadelphia, 9 Philadelphia 550 Pa. (1872).

[3]Rapp *v.* Board of Education of City of Las Vegas, 284 P. 761, 34 N.M. 526 (1927).

[4]Tonini *v.* School District No. 17 of Seminole County 8 P. (2d) 67 Okla. (1932).

[5]Harris *v.* Central Union High School District, 188 P. 617, 45 Cal. App. 661 (1920).

[6]Driscoll *v.* Council Bluffs Independent School District, 16 N.W. 291, 61 Iowa 426 (1883).

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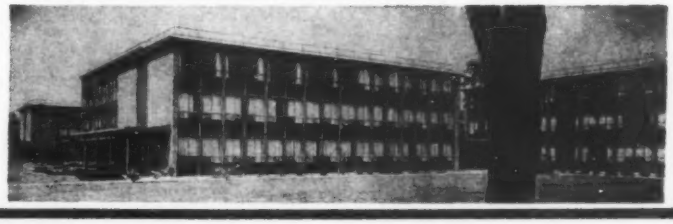

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CHALK DUST

AUDIO-VISUAL EDUCATION

THIS MONTH'S administration study on audio-visual education gives some idea of the staggering advances made in that field during the past few years. It is an area in which educators are still staggering. I take great pride in the fact that, more than a quarter of a century ago, as school superintendent at Sugartown, I initiated what may have been the first formal program in audio-visual education.

At my urging the Sugartown Board of Education approved the purchase of a phonograph and a secondhand motion picture machine. The purchase was put through with comparative ease because the village nickelodeon, of which the board president was owner, went bankrupt and had to be sold at auction. Because of my ignorance and enthusiasm, I was appointed ex-officio in charge of audio-visual education and operator of the movie machine.

Due to budgetary stringencies, we could afford to buy only movies of dubious ancestry although a few were furnished free by enterprising commercial concerns. I should remind today's complainers that this was before the days of extrasensory perception, and the commercials were so blatantly evident that they would make a modern TV program flip-flop with envy.

We supplemented the meager visual program with free stereopticon slides obtained from the W.C.T.U., the local medical society, and the army recruiting service. Inasmuch as these slides dwelt mostly on the less joyous and carefree aspects of the social scene, they were not always an unqualified success, although I understand they are still available on request.

The state department of hygiene also loaned us several films on nature study that dealt exclusively with the private careers of the birds and the bees. These films had to be shown to restricted and segregated audiences, and the kids were bored to death with the whole business.

I also attempted to carry visual education into the science classes and urged the pupils to gather frogs, newts and skinks, which are so numerous in all school districts. However, these activities fell through after the resignation of seven bus drivers.

The least successful part of the program was the audio. The talking machine was not adapted to educational processes; after the young people had chosen several dance records deemed unsuitable by the board, the machine was dismantled, and the motor was loaned for use in an experimental dishwasher built by the newly established home economics class.

But glory be, my successors persevered, and now look where we are. In the Midwest the ETV program is flying high (20,000 feet to be exact), and it is expected that the program will be broadcast to 5 million students. I only trust that my successors have less mechanical trouble with their airplanes than I had with the talking machine.

In New York State, closed-circuit TV is used, and commercials are limited strictly to announcements of the senior dances and the basketball games. In Hagerstown, Md., it is my understanding that virtually every pupil is wired for sound. All across the land it is a futile administrator indeed who cannot afford a loud-speaker system wherewith to interrupt classes, trace lost overshoes, practice his forthcoming speech at the Rotary Club, enunciate mild commercials for the P.T.A., and otherwise harass teachers whose only wish is to be let alone.

And this is just the beginning. Insofar as the entire audio-visual education program is concerned, we should abbreviate the old motto "Stop! Look! Listen!" simply to "Look! Listen!" for as we strive to search and research, we will see and hear progress the like of which we never dared to dream.

A LA SPINNING

AS SOON AS a school administrator retires and begins to realize that his utters have become mere mutters, he enters that painful adjustment period of ho-hum. This eventually winds up in some unenthusiastic project, such as growing rubber plants or the propagation and care of blue-tongued skinks.

However, Supt. James M. Spinning of Rochester, N.Y. (retired but unrepentant), has broken the dullish pattern of retirement by a daring innovation that might well be called the Constructive Utter. Shortly after Jim's 20-odd year reign in the Lilac City, the board of education began to fall to pieces (not an unusual phenomenon among school boards). "An ex-ex can be an awful nuisance," quoth Mr. Spinning between clenched teeth, "and I have no desire to go down in history as the Ann Landers of school affairs."

Nevertheless, when the situation worsened, and it appeared that Jim's competent successor was to be sacrificed on the horns of the community dilemma, Jim bestirred himself. Like a certain former president of the United States, Jim gave the school board and the community you-know-what in a few well chosen words. Of course, it was done with the grace and tact that has made Supt. Spinning a synonym for educational tactmanship.

Nevertheless, according to all reports, Jim laid it on the line.

It is not suggested that such a procedure should be followed by many "retirees," for Jim Spinning is "uniquer" than most school administrators, being gifted with great courage, wit and wisdom and a terrific command of the English language.

The usual retiree probably would do well to rent a park bench and watch the squirrels at play, thus reminding himself nostalgically of his former dealings with advisory boards and filing systems. But if, perchance, there is a Jim Spinning in some bedeviled community where the school board is even more obstreperous than is wont, let him consider the advisability of the Constructive Utter.

(See Spinning's report on Rochester on page 22.)

TRAVELIN' ALONG

"School board members are beginning to realize that professional travel is an essential element in the improvement of instruction and the administration of schools," reports Supt. Lawrence Shepoiser of Wichita, Kan.

Comments Supt. McGillicuddy: "That isn't exactly the reason given by some school board members when they tell their superintendent where to go."

ONE AT A TIME

What, querries Constant Reader, is the most pressing problem in education today? After reviewing several hundred manuscripts, theses and dissertations, Mr. Chalk Dust reluctantly has arrived at the conclusion that the most pressing problem in education is the one that the writer happens to be writing about at the moment.

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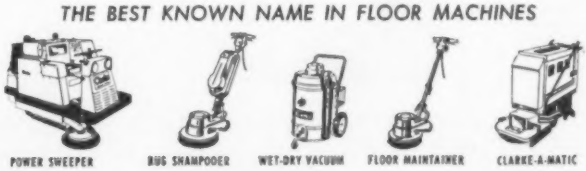

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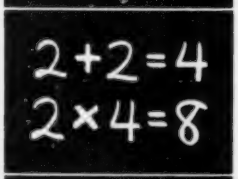

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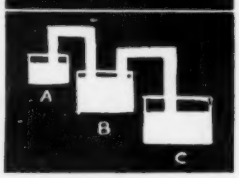

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Report from WASHINGTON

By EDGAR FULLER

RAYBURN now says he's not in favor of federal aid for teacher salaries. Shake-up in rules committee may bring action this year.

Speaker Sam Rayburn said *last year* that, provided liberal Democrats behaved themselves, he would see that educational legislation passed through the House rules committee. But it stalled there, as usual. Now the reason the way was not cleared has been made public: The Speaker told a press conference, in the presence of President-Elect Kennedy and Vice President-Elect Johnson, that he does *not* favor federal funds for teachers' salaries. His attitude may extend to federal funds for current expenses, which would include teachers salaries.

In any event, the public uproar over his statement has reportedly led to Speaker Rayburn's agreement with President John Kennedy that the House rules committee must be reformed to clear the track for education and labor legislation. The least painful method would be to add two liberal Democrats and one Republican to get a liberal 8 to 7 majority. Even this, however, may not be easy to achieve. The Speaker first must obtain the consent of the conservative House committee on ways and means — the financial watchdog that serves as the House committee on committees. After that, the conservative coalition could conceivably stop the reform on the floor of the House.

The alternative method might be more painful politically, but nevertheless seems more probable. This would call for appointment of a liberal Democrat to replace conservative Representative Colmer of Mississippi on the House rules committee. This action would not extend to efforts intended to relieve three other representatives from Mississippi and one from Louisiana of important committee assignments they hold as Democrats. Like Representative Colmer, they openly opposed the election of Mr. Kennedy and Mr. Johnson. Such disciplinary action would stymie any reapproachment between Mr. Kennedy and the Deep South, which was begun when Mr. Kennedy received the message of congratulations on his election from Gov. Ross Barnett of Mississippi the day after the eight Mississippi electors cast their votes for Senator Byrd of Virginia for President.

Photo by Harris & Ewing, Washington, D.C.
LINCOLN MEMORIAL

There are a number of half measures such as a 21 day limit on the time the rules committee can delay a bill, and the political combat may force some such compromise.

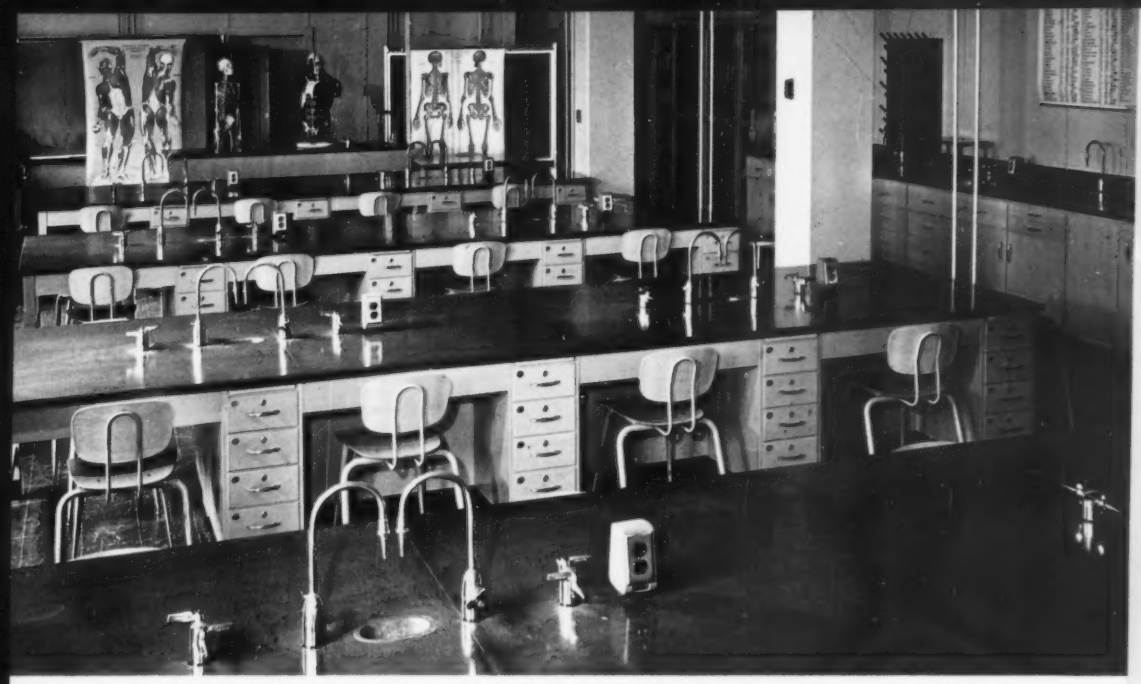
FIVE N.E.A. departments deplore mass education based on impersonal solutions. "Labels and Fingerprints" lacks judicial approach.

Individualized teaching to match the pupil's inescapably individualized learning is demanded by five N.E.A. departments representing superintendents, principals, curriculum specialists, and rural educators.

Deploring mass education based on impersonal solutions to problems of learning, a booklet called "Labels and Fingerprints,"[1] says, "The greater the stress of the times and the demand of the public for high standards of quality,

(*Continued on Page* 128)

[1]American Association of School Administrators, 1201 Sixteenth Street, N.W., Washington 6, D. C. 50 cents.



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LABORATORIES

Report From Washington

(*Continued From Page* 126)

the greater likelihood that we will seize upon the methods of mass production in the school. Although we know it is the individual who learns, it is the class, the group, that gets the attention. Teach the class and expect the individual to adapt himself to the pace set – this is the order of the day."

This became the order of the day, of course, with the advent of mass education, and the warning has long been appropriate. Many modern trends seem to underemphasize the individual. The authors question the desirability of graded class organization, ability grouping, emphasis on memorizing facts, less emphasis on reasoning, horizontal and vertical enrichment practices, the image of the master teacher, and outside testing. They doubt that learning is aided by administrative inventions, such as Carnegie units, changes in the length of the school day or year, team teaching, elementary school departmentalization, or use of teachers' aides. These practices are vastly different in application from school to school, professionally debatable, and characterized by various shades of gray rather than by unrelieved black.

There must be reasons for such persistent old and new administrative arrangements concerning which "Labels and Fingerprints" takes such a dim view. Logically, its authors could go on to downgrade such items as effective school and district organization, modern buildings and laboratories, and perhaps even adequate attention to the financing required to prepare, employ and retain the excellent teachers all agree we need. The truth is that such arrangements are necessary to operate a system of universal education.

The booklet would be more valuable if it had featured a more judicial approach, with a few positive notes to give substance to its ideals. It would have been appropriate, for instance, to recognize that good teachers who individualize instruction have many opportunities to do so precisely *because* schools are constructed, equipped, organized, administered and financed with relative effectiveness. These are areas worthy of attention and experimentation. It is significant that countries lacking such mundane administrative and financing arrangements feature mass illiteracy, with education for only a small privileged class.

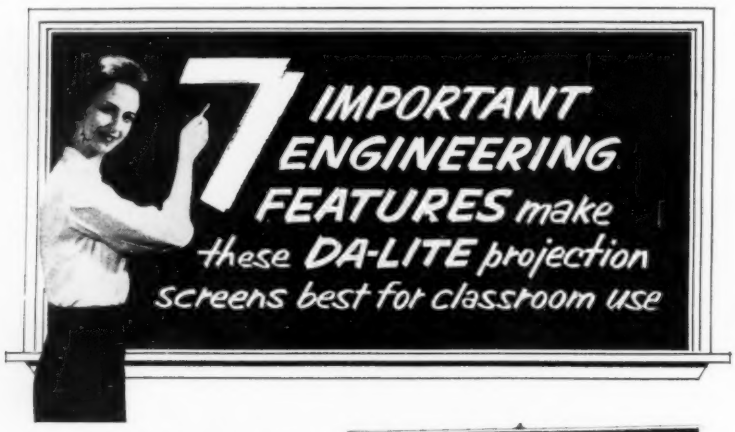
Inspired teaching and individual learning are ideals for everyone. Practically, such teaching and learning are more difficult to achieve in large classes than in small classes. We may be able to use a combination of these without compromising on this issue too much, even when one-fourth or more of the population is in school, if we can somehow provide the school environment that favors effective learning for each pupil.

NATIONAL Science Foundation adds anthropology, economics and other social sciences to its basic research program.

The National Science Foundation recently broadened its functions by including anthropology, economics and other social sciences within the scope of its operations to promote basic research. This is a recognition of the opinion that mathematics and the natural sciences should not be specially promoted by the federal government to the total exclusion of other important fields of learning. The change is similar to proposals that the National Defense Education Act be amended to include materials and equipment to improve instruction in geography, economics, English, history and government.

National Science Foundation programs have continued to grow, particularly in the preparation of secondary science and mathematics teachers. This year, N.S.F. will support 340 summer institutes for 17,500 high school teachers of mathematics and science; academic year institutes for 1500 teachers; week-end in-service institutes for 9000 teachers, and

(*Continued on Page* 130)



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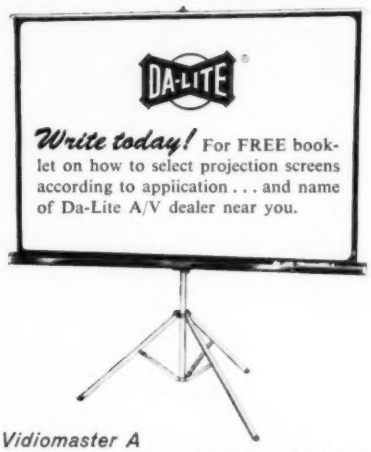

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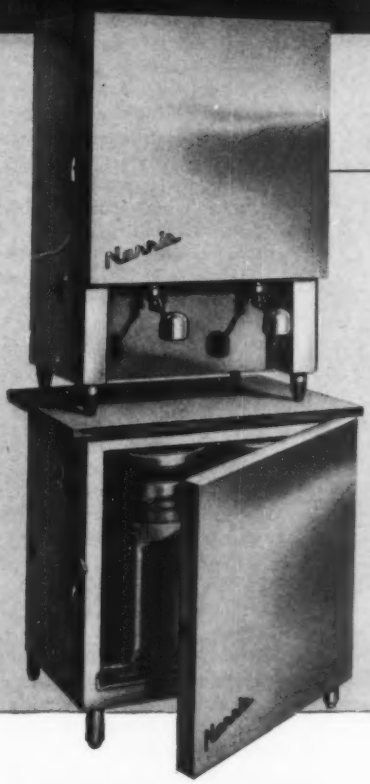

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Yet we had to do *something*. Too many days we opened school in cold buildings or had to shut down early because sludge clogged the nozzle and caused the burner to fail.

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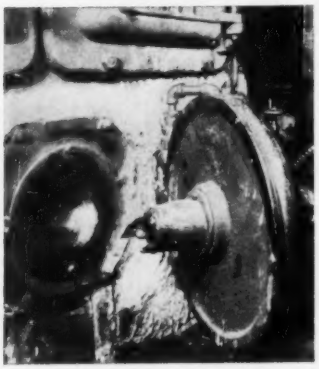

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FOR OVER SIXTY YEARS QUALITY ABOVE ALL

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Maintenance materials for the School Building . . . serviced to your satisfaction

(*Continued from Page* 128)

graduate fellowships for another 500 teachers. A number of programs also are available for elementary teachers. Last July, Congress gave the N.S.F. an extra $30 million for tuitions, grants and allowances for these programs which have become a major factor in teacher education.

PRESIDENTIAL panel recommends more money for graduate students in science. Makes no distinction among public and private educational institutions.

A panel on basic research and graduate education of the President's Science Advisory Committee has issued a report of considerable significance.[2] Its theme is that basic research and graduate education are the most important factors in American scientific progress, and that they ". . . will grow stronger together or not at all." Although it emphasizes that the federal share in all university research is more than 70 per cent, the report proposes further development of research and graduate education in universities as the principal national resource in this field.

The report claims that the federal government is the only agency in our society responsible for the national security, adding that no other agency has the financial strength to provide the necessary support and incentive for work in the sort of scientific research that is necessary for the national safety and welfare.

The report recommends that the federal government expand its subsidies to graduate students in science, together with substantial supplementary grants for the general support of scientific research in universities. Beyond these, it suggests a direct subsidy of not less than $3500 a year to be paid directly to the institution for each subsidized graduate student.

In spite of the fact that matching of federal grants has been insisted upon by the Eisenhower Administration, the panel favors some grants without matching. Its conclusion is, ". . . when the government has a particular interest in a particular expensive installation of more than local importance, it must expect to meet all or nearly all the cost of the undertaking. There may also be other circumstances in which a particularly good opportunity for progress would be lost if 'matching' were insisted on, and we believe that unmatched grants should be made in such cases."

No distinctions are drawn among public, private and church related institutions for these purposes. (*Cont. p.* 132)

[2]Scientific Progress, the Universities, and the Federal Government. Washington 25, D. C.: Superintendent of Documents, U. S. Government Printing Office. 15 cents.

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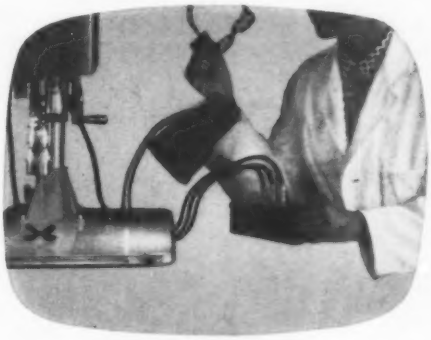

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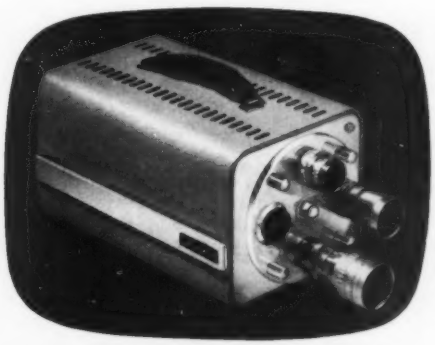

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TASK FORCE on education accepts federal support for schools as permanent policy; would spend $10 billion for education.

In its report to President John F. Kennedy, a special study task force committee for education recommended spending $10 billion in a federal education assistance program. This task force is one of several reporting recommended programs to the new administration in such fields as education, medical care for the aged, housing and emergency aid to economically depressed areas.

The task force report on *education*, presented by Frederick Hovde, president of Purdue University and head of the task committee, is a significant breakthrough both in attitude and in specific suggestions for federal support of education. It accepts federal support of schools and colleges as a permanent policy. It also accepts the principle of the flat grant, and recommends, as a first priority, $30 annually for each pupil in average daily attendance in public schools. The formula is objective, and the purposes for which the states may extend the funds include construction, teachers salaries, "or other purposes related to the improvement of education."

An additional $20 annually for each pupil in A.D.A. for states with less than 70 per cent of the average national income is also to be distributed on an objective formula. It is possible to imagine that a state with 71 per cent of the average national income may, because of particular circumstances, need additional federal funds more urgently than another state with 69½ per cent of the average national income. But, as the lawyers say, you have to draw the line somewhere.

The task force recommendation for still another $20 annually for each pupil in A.D.A. in large cities is a new wrinkle. It is essentially a move by these cities to offset alleged discrimination against them by rural dominated state legislatures in distribution of state funds for education.

It also reflects the new administration's emphasis on big city problems. These grants — for federally specified purposes — would be made by the U.S. Commissioner of Education to cities of 300,000 or more people after proof of need under federal criteria. The administration would by-pass state governments.

Such a monetary bow to the big cities would be certain to raise serious problems of distribution. Why Toledo but not Akron, Indianapolis but not Erie, Dallas and Denver but not Scranton and Wheeling? State legislatures might be tempted to change state aid formulas.

The $350 million for matching grants and $150 million for loans recommended in the first year, with increases to meet "evolving" needs in future years, would be earmarked to provide for increased numbers of students in colleges and universities, including junior colleges. Federal funds for the construction of classrooms and academic facilities apparently would be available for sectarian institutions along with others, which is widely believed to be both unconstitutional and dubious in terms of public policy in education.

N.D.E.A. should be extended and strengthened, says task force, which would broaden scope of the act and increase services.

The task force recommends extension of the N.D.E.A., with some modifications for five years. Recommended modifications include authorization of student loans from private funds to be guaranteed by the government.

The task force also would extend "forgiveness" of loans in return for teaching, granted under the present law only to teachers in public schools, to "all teachers," presumably at all levels of education. This was recommended by the Council of Chief State School Officers legislative committee last November, but was disapproved in the business meeting of the council. (*Cont. on p. 134*)

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. . . says John A. Whitehead
Superintendent of Schools, Union Free School District No. 2
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UNION FREE SCHOOL DISTRICT NO. 2
EASTCHESTER, NEW YORK

JOHN A. WHITEHEAD
SUPERINTENDENT OF SCHOOLS
69 CRAWFORD STREET
EASTCHESTER, NEW YORK

September 20, 1960

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These advantages have been realized fully and we have also had the pleasure of eliminating unsanitary pillows, blankets, or other materials when children sit on floors since the floors are warm and comfortable at all times. Our cost for fuel this first year was nearly ten per cent below the amount budgeted which leads us to believe that this will be an economical system to operate.

Perhaps from an administrative point of view, the best feature of all was that the system worked from the day we started with practically no adjustments.

Hearty congratulations!!!!

Very truly yours,

John A. Whitehead
Superintendent of Schools

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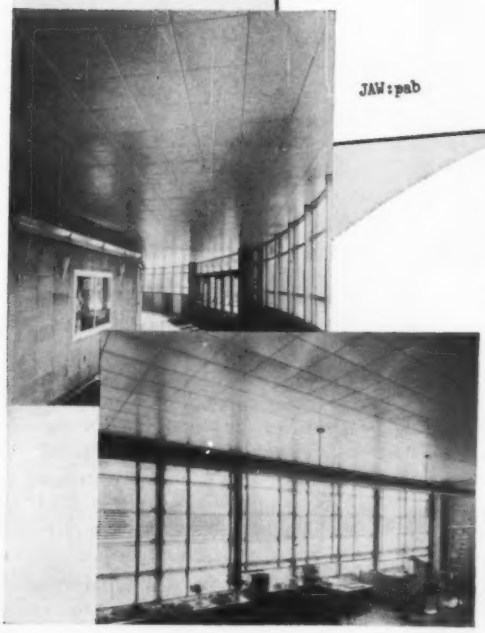
No other heating method provides the same uniformity of temperature with essentially no differential from floor to ceiling

Maximum heat transfer efficiency is attained with substantial fuel economy with maintenance costs considerably lower

Floors are always warmer than the temperature since the Burgess-Manning ceiling does not depend on air movement for heat transfer - there are no drafts



Mr. Whitehead's letter confirms the superiority of the Burgess-Manning Radiant Heating, Cooling and Acoustic Ceiling . . . which offers schools

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(*Continued From Page* 132)

The task force also would eliminate the present disclaimer affidavit on communism and would authorize federal funds for the construction of ETV networks "by states and regions." "Region" might be the six-state television project of the Ford Foundation now getting under way in Indiana or, presumably, a community ETV station privately organized to serve a city and its environs.

The task force recommends setting up a president's advisory committee on education to achieve equality for education with similar presidential advisory committees in science and economics.

The new administration has task forces reporting recommended programs in many fields, asking more than can be expected.

Members of the task force, in addition to Chairman Hovde are: Benjamin C. Willis, general superintendent of Chicago schools; Alvin C. Eurich, vice president, Ford Foundation; John W. Gardner, president, Carnegie Foundation; Francis Keppel, dean, graduate school of education, Harvard University, and Russell R. Thackrey, executive secretary, Association of Land-Grant Colleges and Universities. ■

Associated Exhibitors

(*Continued From Page* 120)

return of A.A.S.A. national conventions. In 1946, four regional meetings were held — at Kansas City, Mo.; Atlanta; New York City, and Chicago. National conventions were resumed in 1947 at Atlantic City; however, the early regionals had created a convention pattern which has persisted in modified form to this day: Two national meetings followed every third year by regional meetings.

In the years since 1947 the story of the Associated Exhibitors has been one of steady growth and increasing acceptance. In ever larger measure, the relations between the entrepreneur and the educator have been characterized by mutual respect and helpfulness. Today, members of the Associated Exhibitors of the N.E.A. and school administrators are truly "partners in educational progress."

(The final installment of this series of articles on the Associated Exhibitors of the N.E.A. is scheduled for March. It will discuss the expanding services of the organization, such as the American Education Award and the S. D. Shankland scholarships, its code of ethics, and the new feeling of purpose which characterizes the association's plans for the future.) ■

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ROCKWELL

(*Continued From Page* 50)

Association were furious. Was this the board's contribution to teacher morale, this ignoble passing of the buck? Immediately the board polled the staff members on whether they were for or against the board's action. Three-quarters of those voting were against the board and for the superintendent.

The summary portion of the survey report (since issued by the board as a sort of White Paper) is highly complimentary to the board and the administration on several counts. Most criticisms of the board itself can be dismissed immediately, because there is no way of knowing whether the teachers were thinking of the board as it existed before Jan. 1, 1960, with a 3 to 2 Republican majority or as the 1960 board, dominated by Democrats.

There had been no attempt to discern *trends* by asking for opinions on conditions as of now, one year ago, 10 years ago. That would have helped to pinpoint causes. In March, the teachers were disturbed because salary adjustments were still pending and because the previous board had adopted a health insurance program different from the one which *they and the superintendent had recommended*. Two or three months later the responses undoubtedly would have been different.

The survey reported a gulf between top administration and other certified personnel. Yet 72 per cent of those polled have since taken a stand beside the superintendent. Lack of communication within the system was scored. Many complained that they first learned through the press about board and administrative action that was important to them. These dissenters seem not to have heard of newspapermen and overnight printing presses. There were complaints of classroom interruptions and inadequacy of teaching materials, available to the professional staff.

Only 35 per cent of those polled felt that the people who get promotions really deserve them. ("It's who you know, not what you know.") Yet 80 per cent described their immediate superiors as splendid dedicated people with whom they had fine relations and described their supervisors as helpful!

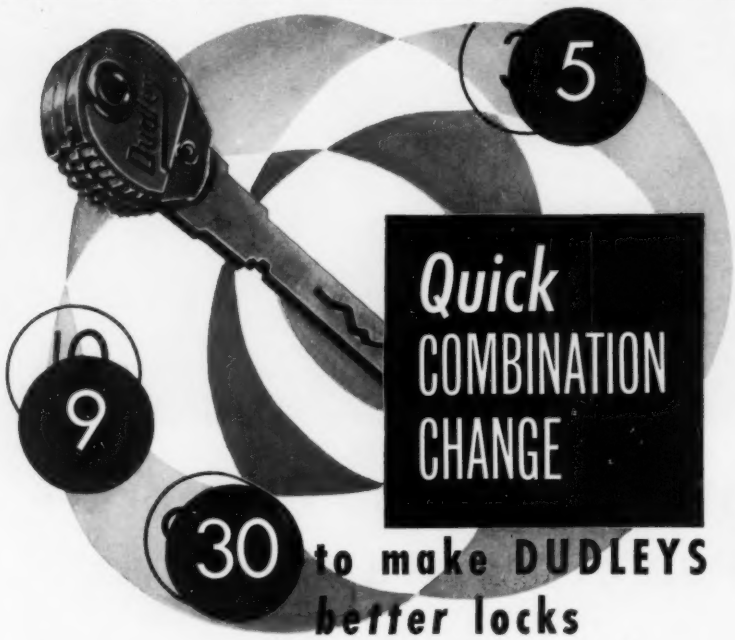
Here again, the one-dimensional character of the report must be noted. While responses were grouped according to length of service in the system, the summary makes no distinction between the opinions of those with seven months and those with seven years of service — or 25. There is reason to believe that the opinion of teachers with more experience was far more favorable to top administration than those of the newer group (about 300 a year) where turnover is most rapid.

Close analysis might well show that the report was *misinterpreted* as well as *misused* by the board. Surely criticisms of administrative-staff communications should be compared only with scores in other large cities. The city superintendent never can be as closely in touch with all the teachers as the village superintendent can.

F.C.T. president would hire Conant or Rickover. It would be wrong to leave the impression that the board has been without defenders. There were letters to the editor maintaining that the board's decision was reached in complete good faith, entirely apart from political motive or pressure, and that the move required great courage. The only organized school group to endorse the board's action was the Rochester F.C.T. Its president urged that the board now bring in as superintendent someone of the caliber of James B. Conant or Vice Admiral Hyman G. Rickover.

How much politics? Was there a political motive? The Democratic board members voiced an emphatic *no*. The party leader said that, while he had brief foreknowledge of their decision, he had never presumed to tell the board members what their course should be. Then there were those who said that either he

(*Continued on Page* 138)



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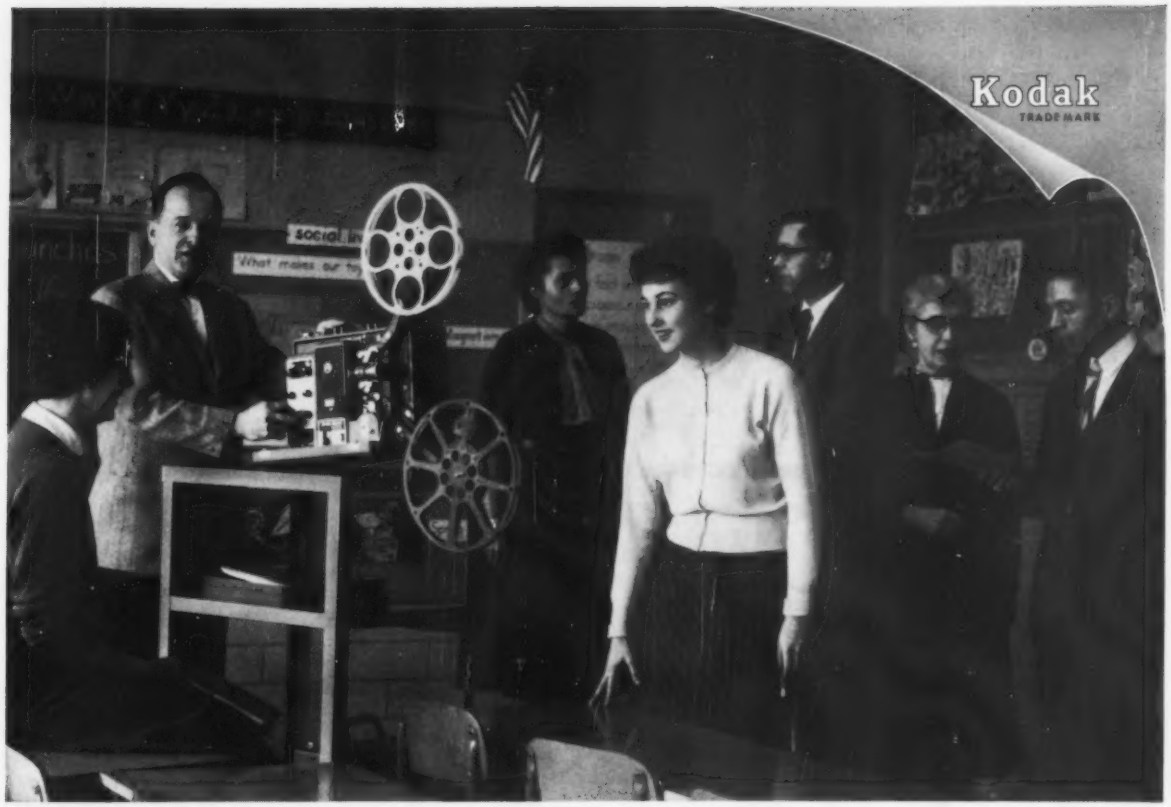

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Principal at the new Norwood Elementary School, Baltimore County, Md., selected by A.A.S.A. for its exhibit of outstanding school designs:

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"A-V aids, they feel, must contribute to the entire learning experience—should not disrupt order, nor distract attention. When attention is held, the learning process is quickened, the subject more thoroughly understood.

"Our teachers expressed themselves on these matters when we were examining projectors. Then they selected the Kodak Pageant Projector as their practical choice. Easy to set up, the Pageant meant programs started promptly. Quiet, the Pageant didn't distract students by machine noise."

Because reel arms, belts and cords are all permanently attached in place, the Pageant sets up easily. Operation is so simple that many teachers leave it entirely to the children.

To see a demonstration of the Kodak Pageant's brilliant screen image, its high quality sound, and its other practical features, call a nearby Kodak A-V dealer. Or, write for Pageant Bulletin V3-22. No obligation, of course.

Kodak Pageant Projector **EASTMAN KODAK COMPANY,** Dept. 8-V, Rochester 4, N. Y.

(*Continued From Page* 136)
should have told them or picked board candidates who would act wisely without being told.

A lot of people in Rochester are taking their action cue from an editorial that quoted an unnamed authority to the effect that board members should be so chosen that not only would they never be prompted to act for political advantage but that they could never be *thought* so to act.

The leader of the Republican party, roundly denouncing his opposite number, has made partisan gestures for a nonpartisan board. First, he proposed legislation to take effect in 1961; then he postponed the effort for three years, after fiscal independence for the board could be enacted with it. At this writing the Democratic leader has not been willing to go farther than to listen to a group which is urging a concordat for return to a bipartisan board.

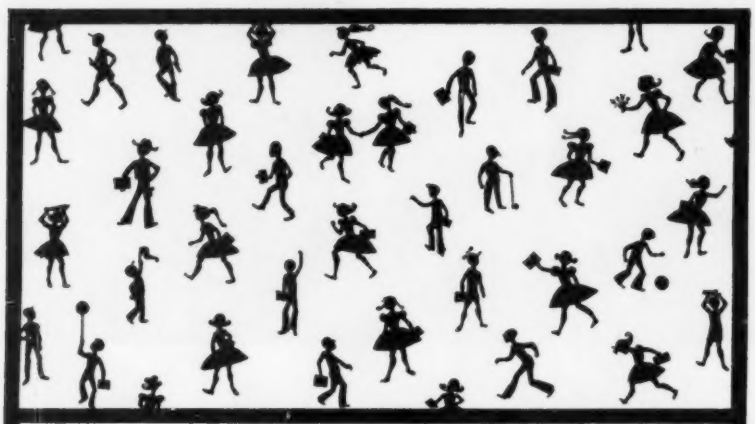
Union passes the ammunition. What about the role of the teachers' union? Its attitude toward the board has been one of considerable if not extreme unction. It has been helpful in supplying supplemental reasons for the superintendent's release. The union's vice president, a high school teacher and nephew of one of the newest board members, listed in "The Federation Teacher" an "accumulation of dissatisfactions."

Stipulating that he would serve only if Dr. Seymour also asked it, James S. Wishart, principal of West High School, has accepted a six-month appointment as acting superintendent.

Seymour lists eight suggestions. In a letter to Dr. Wishart, Dr. Seymour hastened to register his support and, in response to a specific request for guidance on superintendent-board relations, added: "Your tour of duty will be aided immeasurably (1) if the board adheres strictly to its by-laws in the conduct of its business; (2) if only the board president is the official spokesman of the board; (3) if board members will allow you a margin for error in judgment; (4) if board members agree to adhere to agreements made at their meetings; (5) if you and board members can agree on what matters are strictly administrative, what matters are board policy, and how 'gray zone' matters can be resolved; (6) if board members will guard carefully against any actions that might have political implications, such as caucusing by the majority members; (7) if board members will agree to communicate first with the superintendent, rather than through members of his staff, so that he is always in touch with all developments within the system; and (8) if the superintendent is accorded the privilege of discussing important issues and problems with the board before anything is crystallized into a proposal."

With the new year, Dr. Seymour has moved his office to an auxiliary building; here he will remain on salary as consultant for such part of seven months as may be necessary to make up accumulated leave and to complete such projects as his work for the Rochester Area Educational Television Association (of which he is president) in obtaining a school channel, rounding up a report on the seven-period day business, and revising the board rules!

Beyond that he has announced no plans, though it is known that he has several offers under consideration. The first of them came within the hour in which his release became known. ■



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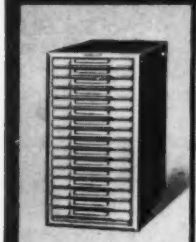

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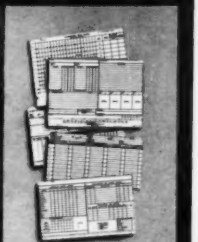

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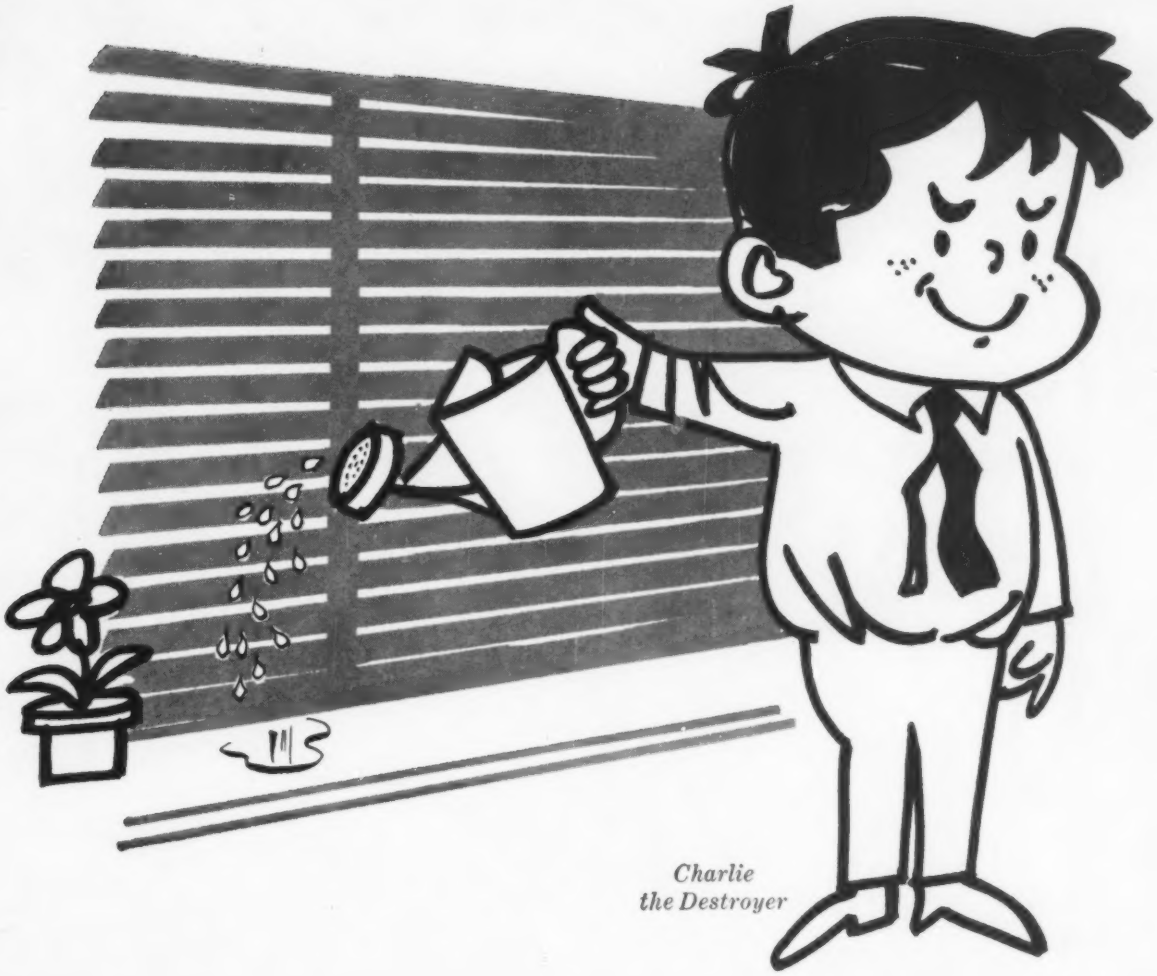

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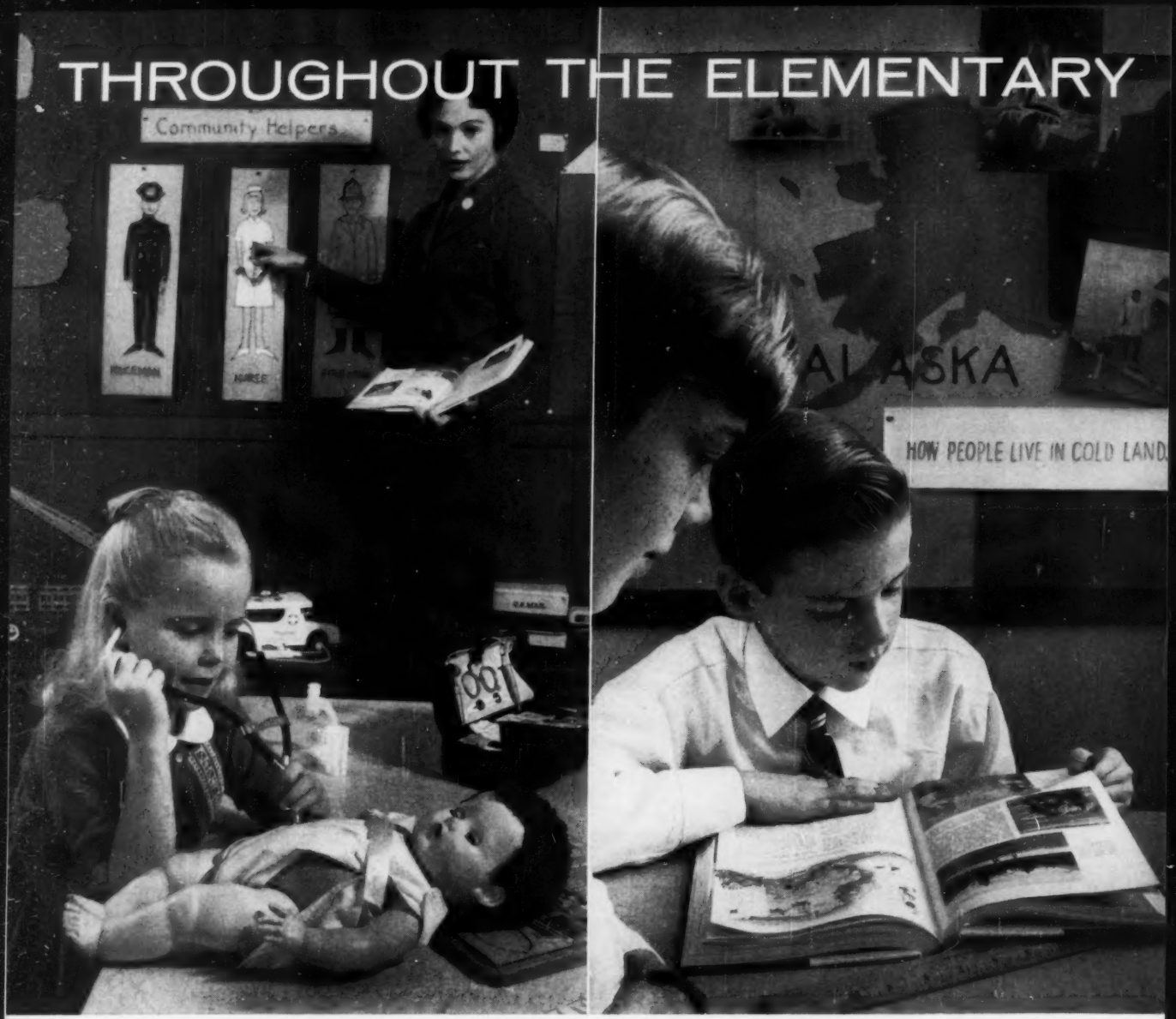

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NEWS IN REVIEW

Texan Irby Carruth Is New A.A.S.A. President-Elect; Vice President Is Supt. Natt Burbank, Boulder, Colo.

WASHINGTON, D.C. — Irby B. Carruth, superintendent of schools in Austin, Tex., and 1960-61 vice president of the American Association of School Administrators, has been chosen as president-elect of the A.A.S.A. Final ballots were counted here on January 6 by the association's board of tellers.

Supt. Carruth was an A.A.S.A. executive committeeman from 1943 to 1948 and member of the 1956 yearbook commission. He was president of the Texas Association of School Administrators from 1943 to 1945. He has been a member of The NATION'S SCHOOLS editorial advisory board since 1959.

He has been a classroom teacher, high school principal, and superintendent at Canyon, Tex. He became superintendent at Bonham, Tex., in 1938 and, after six years there, went to Waco as superintendent. He has been superintendent in Austin since 1950.

Irby B. Carruth

The new president-elect will take office March 15.

Other candidates for the office were Evart W. Ardis, director of the bureau of appointments and occupational information, University of Michigan, Ann Arbor, and Alfred W. Beattie, superintendent, Allegheny County, Pittsburgh.

Newly elected vice president of the A.A.S.A. is Natt B. Burbank, superintendent, Boulder, Colo., since 1949. He served a term as member of the association's executive committee from 1956 to 1960. Mr. Burbank also has been superintendent in Concord, N.H., and Melrose, Mass.

Oscar V. Rose, superintendent, Midwest City, Okla., is the new executive committee member.

Benjamin C. Willis, general superintendent of schools in Chicago, and president-elect during the past year, will take office as president the 15th of next month.

Asks That Law Define Superintendent's Duties

ROCHESTER, N.Y. — The state citizens committee for the public schools has urged that the State Education Law be brought up to date and has asked the state school boards association and the state congress of parents and teachers to join with it in a plea to the state legislature.

Said Max J. Rubin, president of the committee: "We speak of local control of education, but we also speak of education as a state responsibility and every local school board as an agency of the state. There are overlapping concepts which must be crystallized and defined.

"The entire method of submission of budgets is antiquated, blunderbuss and unscientific. Machinery that was devised for a town meeting technic has remained as the machinery, though districts have grown so large that the single town meeting is physically incapable of serving its purpose."

Another failure of the Law, Mr. Rubin contends, is that it does not give in detail the responsibilities of the school board as a policy making body and the superintendent as administrator.

Audio-Visual Developments Are Object of N.E.A. Study

WASHINGTON, D.C. — Just what opportunities and problems has technology brought to the nation's classrooms?

After more than a year of planning, an 18 month search for the answer to this question is about to get under way. Titled "Technological Developments and the Teaching Profession," the project is being sponsored by the National Education Association under a $102,980 contract with the U.S. Office of Education under the N.D.E.A.

Stated purpose of the study is to assimilate what is known about relatively new developments in TV, teaching machines, and language laboratories, as well as the more conventional A-V devices. Conclusions regarding teacher education, teaching technics, and schoolhouse planning also are expected.

Project director is James Finn, professor of education at the University of Southern California and president of the Department of Audio-Visual Instruction, N.E.A.

Bars Tuition From Tax Funds to Parochial Schools

MONTPELIER, VT. — A lower court ruling that the use of public tax funds for payment of tuition to parochial schools is a violation of the state constitution and of the first amendment to the U.S. Constitution was affirmed recently by the state supreme court here.

The board of education of the South Burlington school district in Vermont had been paying tuition fees to neighboring schools, including sectarian, because the district does not maintain public high schools. The doctrine of separation of church and state was abridged by payment of these fees to two parochial schools in Burlington, the lower court ruled.

The supreme court's decision read: "Equitable considerations, however compelling, cannot override existing constitutional barriers. Legislatures and courts alike cannot deviate from the fundamental law."

New Educational Media Council Will Coordinate A-V Efforts

EAST LANSING, MICH. — Thirteen national associations in the audio-visual and book publishing fields have coordinated their efforts through a new organization, the Educational Media Council. The council was formed at Kellogg Center on the Michigan State University campus here last November to provide better service to American schools and colleges in the areas of instructional materials, equipment and methods.

The four-fold function of the council is: to serve as an informal sounding board for participating organizations and the U.S. Office of Education for developments in these fields; to act as a clearing house for the exchange of information and thus clear up conflicts and misunderstandings; to provide at the professional level a forum on educational media problems, and to sponsor project development in cases where activities go beyond the scope of any presently constituted single organization.

Both action and implementation programs are being developed in accordance with these functions.

(*Continued on Page* 146)

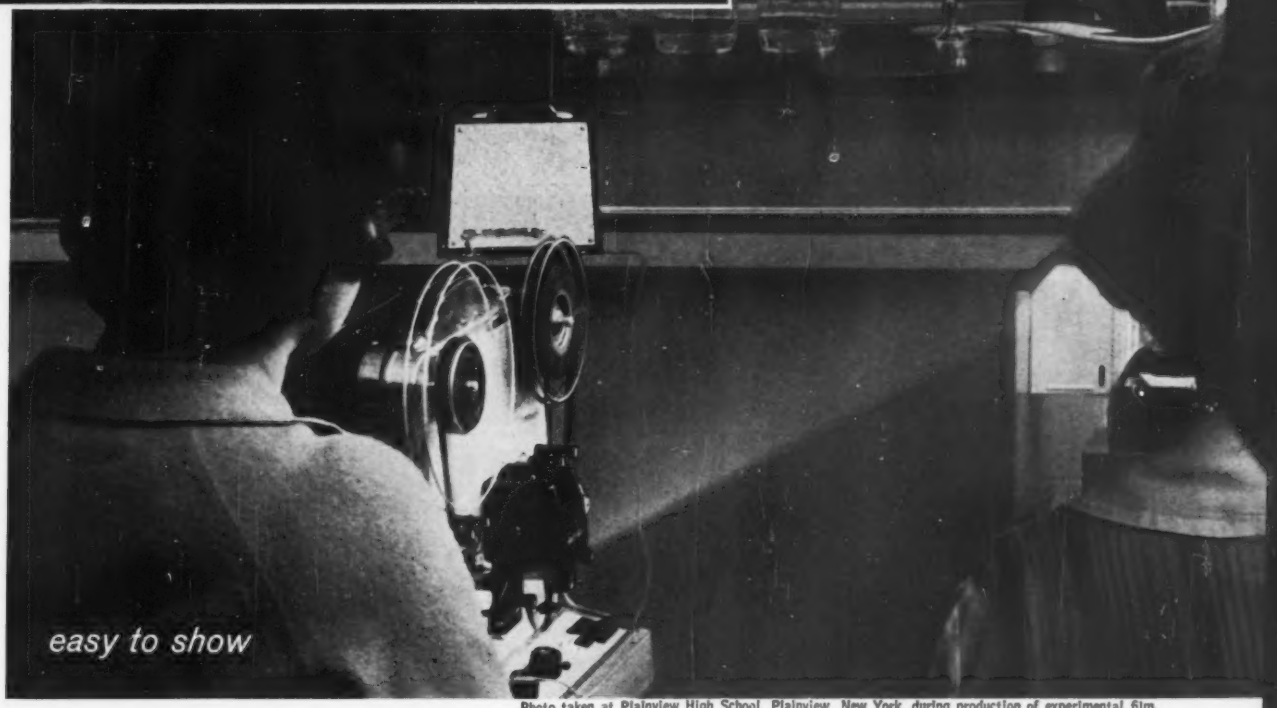

Photo taken at Plainview High School, Plainview, New York, during production of experimental film.

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W. C. Menninger To Receive American Education Award

W. C. Menninger

LONGMEADOW, MASS. — William C. Menninger will receive the 34th annual American Education Award for outstanding contribution in the broad field of education at the 1961 regional conventions of the A.A.S.A. He was selected by the board of directors of the Associated Exhibitors, N.E.A.

Dr. Menninger is president of the Menninger Foundation of Topeka, Kan., a nonprofit professional organization devoted to research, education, treatment and prevention in psychiatry. He has served as president of the American Psychiatric Association, the American Psychoanalytic Association, and the Group for the Advancement of Psychiatry.

Urges Raising Literacy Level in Underdeveloped Countries

WASHINGTON, D.C. — Raising the general level of literacy in underdeveloped countries should be the first goal of the International Cooperation Administration, Hollis L. Caswell, president of Teachers College, Columbia University, told the education heads of the group at a recent conference here.

He objected to the training of specialists as the *prime* program.

"The road to an economic system based on modern technology is through widespread education," Dr. Caswell said. "The program of education dare not be thought of as one comparable segment of a total. It must provide the foundation upon which all else is built if our efforts are to have a permanent and continuing effect."

'Ninth Graders May Not Be Ready To Choose Occupation'

NEW YORK. — Seeking to help the average boy formulate a specific occupational objective at the ninth grade level may be an error, states the report of a study by the Horace Mann-Lincoln Institute of School Experimentation of Teachers College, Columbia University.

The report, entitled "The Vocational Maturity of Ninth Grade Boys," suggests that counseling at that stage develop *readiness* for choice of occupation. Helping ninth grade boys to understand the personal, social and other factors having a bearing on educational and vocational decisions is one way the report says this can be done.

Subjects of the study were ninth grade boys in Middletown, N.Y.

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Educational Media Council

(*Continued From Page* 142)

National attention on the potential role of the newer media in education came with the authorization by Congress of expenditures of more than $18 million over a four-year period under Title VII of the National Defense Education Act for research and other activities relating to the newer media. Some of the same educators and professional organizations in the fields who were consulted in setting up the federal program helped to organize the council.

Currently a contract is being negotiated with the U.S.O.E. under which the council itself will plan and, through subcontracts, produce, publish and distribute a national directory of the newer educational media by June 1962. An interim directory of films and filmstrips may be available this year.

Among other projects under consideration are a national public information service and a national training laboratory for study of the preparation of communications media specialists. It is anticipated that much of the council's work can be conducted through member organizations, thus strengthening the individual programs of member bodies while combining their respective strengths in projects and activities of mutual concern.

Officers of the Educational Media Council are: Charles F. Schuller, director of the audio-visual center and professor of education, Michigan State University, chairman; Robert Hudson, vice president for programing of the National Educational Television and Radio Center, New York City, vice chairman; Carolyn Whitenack, professor of library and audio-visual education, Purdue University, Lafayette, Ind., secretary, and Don White, executive vice president, National Audio-Visual Association, Fairfax, Va., treasurer.

School Lunches Reach 13.5 Million Children

WASHINGTON, D.C. — More than 13.5 million youngsters are participating in this year's national school lunch program, according to the U.S. Department of Agriculture. This is the first time since the program was established in 1946 that participation has topped 13 million, officials said.

In the school year that ended last June, some 12.8 million children were served 2,142,000,000 lunches — 144 million more than in the preceding year. Most of the food, approximately 80 per cent, was purchased locally by the more than 62,000 public and nonprofit private schools participating in the program.

In the 1960 fiscal year, schools received slightly more than $70 million worth of surplus foods.

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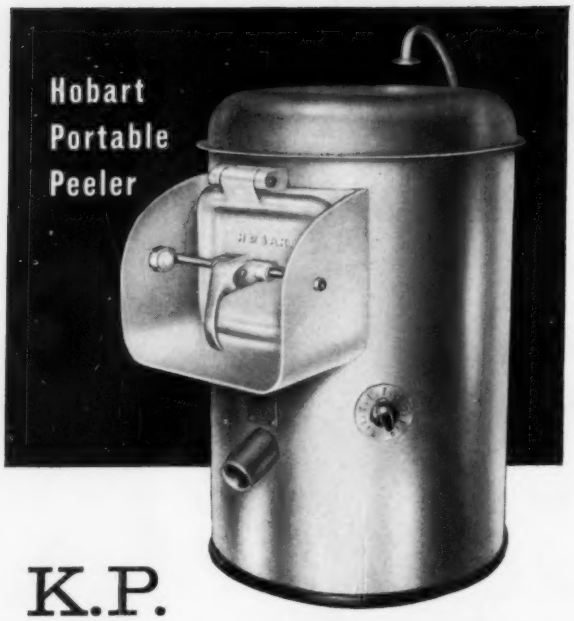

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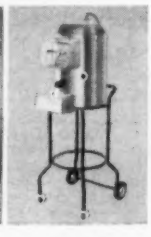

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High School Principals To Hear External Testing Survey Report

DETROIT. — "Individual competence and the national welfare" will be the theme of the 45th annual convention of the National Association of Secondary-School Principals, scheduled to be held here on February 11 to 15. More than 7000 high school administrators are expected to attend the five days of meetings at Cobo Hall.

As in previous years, discussion groups will form a major portion of the program, with 66 such sessions planned over a three-day period. Attention on each day will be given by one of these groups to the examination of a N.A.S.S.P. "position" statement on Social Studies in the Comprehensive Secondary School. At a Monday afternoon symposium previous position statements on science, mathematics, modern foreign languages, and English language arts will be reviewed.

One evening session will be devoted to the general topic: External Testing Programs — Where Do We Go From Here? This program is being arranged by the joint committee on testing of the American Association of School Administrators, Council of Chief State School Officers, and the N.A.S.S.P. Reports will be made on the Joint Project on Testing, sponsored by the three organizations, which has been conducted during the past year under the direction of Charles C. Holt.

Major session speakers include the following: David D. Henry, president of the University of Illinois, who will discuss the convention theme; Edward Bennett Williams, noted trial lawyer of Washington, D.C., and George Romney, president, American Motors Corporation, Detroit. Other speakers will include: M. Paul-Henri Spaak, secretary-general of NATO, Paris, France; Philip W. Jackson, University of Chicago (whose subject will be the highly creative adolescent), and James C. Worthy, vice-president of Sears, Roebuck and Co., Chicago, who will discuss Education and Our Economy.

Presiding at the opening session will be James E. Nancarrow, principal, Senior High School, Upper Darby, Pa., and N.A.S.S.P. president. Convention activities will be under the general direction of Ellsworth Tompkins, executive secretary.

Seeks Teachers for Congo

PARIS. — UNESO will recruit 500 French-speaking teachers for secondary and technical schools in the Congo as a result of a resolution passed by the organization's 24 member executive board. Appeals will be sent throughout the world, except to Belgium. The $3.4 million cost for salaries and transportation will come from the U.N.'s Congo fund.

Bantu Become Literate Fast in Union of South Africa

CHICAGO. — The Bantu of the Union of South Africa are achieving complete literacy at a faster rate than any other peoples in Africa, said A. J. van Rooy, chief statistician of the University of South Africa, at a recent press conference here.

"The white peoples (Europeans) in the Union have abandoned the idea of keeping the black peoples (Bantu) down," said Dr. van Rooy. "Instead, the white peoples are trying to help the black peoples."

Figures published by the South African Information Service show that about 80 per cent of the Bantu between the ages of 7 and 20 years are schooled enough to be considered literate. At this present rate, illiteracy will no longer exist in the Union within the next 30 years.

When questioned about the problems, if any, of racial integration in the Union schools, Dr. van Rooy said that because of language differences the Bantu students don't express a desire to go to white schools.

Although there are two official languages in the Union — Africaans and English — there are numerous dialects. Since European students are segregated and go to designated schools where their language is spoken, said the statistician, the Bantu don't mind being segregated into the school where instruction is given in their language.

New York's Bill for Vandalism Increases

NEW YORK. — Cost to this city as a result of vandalism in the schools has increased 18 per cent over last year, the deputy superintendent here announced recently.

Vandals broke 146,700 panes of glass in the first nine months this year; the replacement cost exceeds $440,000. The total cost for vandalism, including fires and unlawful entry and loss of equipment, is estimated at $578,000.

A.D.A. Stresses Training for School Food Service

CLEVELAND. — School food service personnel training programs received special attention at a section of the American Dietetic Association's annual convention held here.

Training for food service supervisors in general was discussed at another section meeting. Topics pertinent to the school lunch field included: the role of the school cafeteria in disaster feedings, principles of planning layouts, new findings in child nutrition, and the importance of the school lunch in nutrition education.

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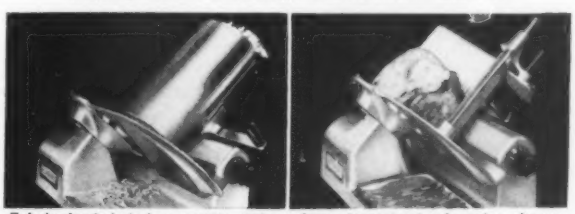

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Junior Kindergarten Program Being Reappraised

LAKE FORREST, ILL. — The fate of the junior kindergarten here rests with the board of education, which is reappraising the 30 year old, tuition-free program. Supt. Albert E. Poole said that the board committee may decide to leave the program as it is, begin to charge tuition, or discontinue the program.

"It's basically an economic thing," he said. "We find out what we invest in the program and then attempt to determine whether our returns warrant the investment."

Dr. Poole believes "the two-year kindergarten program certainly has an effect on the academic learning of pupils, especially in the first three grades."

Enrollment Up 600 Per Cent in Private Schools

NEW YORK. — Enrollment in non-Catholic private schools has increased 600 per cent since 1945, according to the U.S. Office of Education. During this time, Catholic school enrollment has increased 110 per cent, public school enrollment 68 per cent.

Some of the factors believed to account for this increase in non-Catholic private schools are: (1) overcrowding of public and parochial schools; (2) real or impending integration in public schools; (3) belief that private schools teach basic subjects better; (4) desire to have children educated in a religiously oriented environment, and (5) rise in personal incomes.

Chicago P.T.A. Rejects Active Open Housing Support

CHICAGO. — The local region of the Illinois Congress of Parents and Teachers will not *actively* promote legislation for "open occupancy," though it supports the principle of freedom of residence in its platform.

"Open occupancy" allows individuals to live, regardless of race, color, creed or national origin, where their economic situations and cultural backgrounds dictate.

Eight votes from the recent assembly representing 175,000 Chicago P.T.A. members defeated the motion that would have resulted in a resolution urging Mayor Richard Daley and the city council to "enact constructive legislation which will make freedom of residence in Chicago a reality."

A second motion carried, to reaffirm the region's position as stated in the platform, with a "stronger program on education in human relations, through study groups, and programing."

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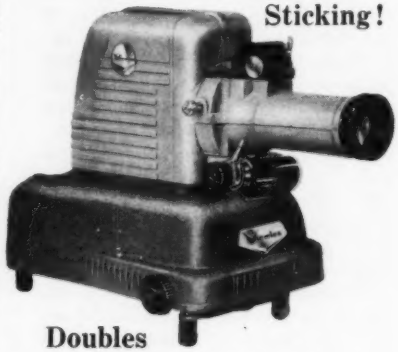

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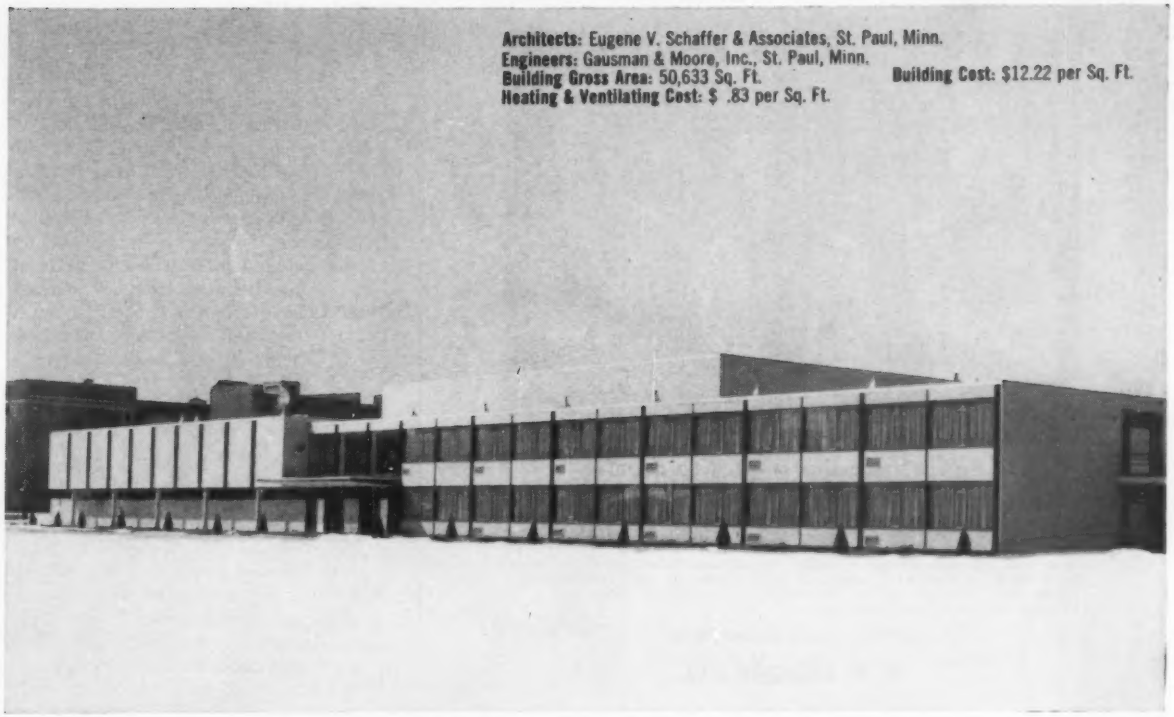

Architects: Eugene V. Schaffer & Associates, St. Paul, Minn.
Engineers: Gausman & Moore, Inc., St. Paul, Minn.
Building Gross Area: 50,633 Sq. Ft. **Building Cost:** $12.22 per Sq. Ft.
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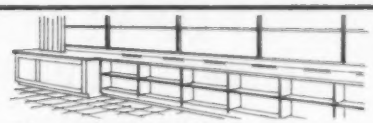

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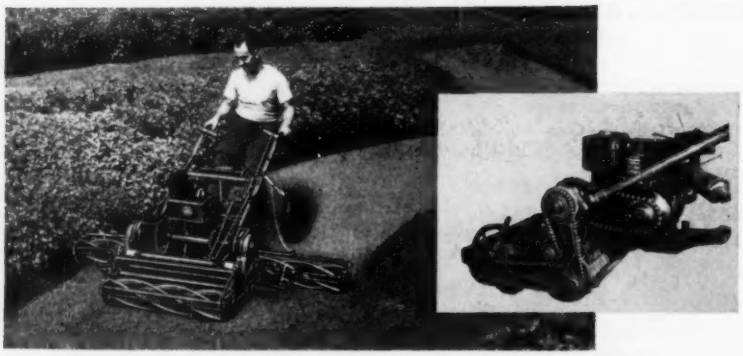

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School Law

(*Continued From Page* 122)

"Clearly, we think, the committee directed the plaintiff to prepare plans. He did so, and his time and labor were worth something, and the evidence so tended to show; and we think the question of the amount the plaintiff was entitled to recover should have been submitted to the jury. It may be the universal custom of architects to prepare and furnish plans for buildings, and take the chance of the same being approved before they are entitled to compensation; but there is no evidence tending to so show."

In Illinois, when an architect attempted to recover under a contract to repair and improve a school building, the board contended that the contract was illegal and cited a statute that required all work other than ordinary repairs and improvements to be approved by a vote of the electors. In this case the work had not been so approved. Nevertheless, the court approved recovery by the architect by holding that, where possible, a reasonable rather than unreasonable construction should be given the statute. It said:

"While under the law the board of education could not build a schoolhouse unless authorized by vote, it might repair and improve such buildings without an election and pay for the same out of a tax levied for building purposes."[7]

Contract of a Continuing Body. When a board in Oregon employed an architect, other than the one who prepared the plans, to supervise the construction of a building, the board defended its action on the ground that it was not bound by a contract entered into by an earlier board, the terms of all of the members of which had expired.[8] The court, holding that a board of education is a continuing body, ruled that the contract was legal and the board was bound by action taken by the earlier board, and the architect could recover.

In Pennsylvania, it has been held that the fact the ultimate cost of a building to be constructed under the architect's plans was in excess of the indebtedness limit did not affect the legality of the contract or impair the architect's right to recover.[9]

In a somewhat different type of case, it has been held that one engaged in construction cannot breach a contract

(*Continued on Page* 156)

[7]Llewellyn *v.* Board of Education of Cicero-Stickney High School Township District, 154 N.E. 889, 324 Ill. 254 (1926).

[8]Jacobberger *v.* School District No. 1, 256 P. 652, 122 Ore. 124 (1927).

[9]Altman for Use of Frost *v.* School District of City of Uniontown, 1 Fay. L. J. 211 Pa. (1938); affirmed 5 A. (2d) 896, 334 Pa. 336 (1939).

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*"Terrazzo Maintenance" published by N.T.M.A., Washington, D. C. NTMA Flash, July 17, 1959.

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Do you hear a pronounced echo? . . . a distinct sound "flutter"? . . . or does the sound of your handclap seem to fade and die instantly? Each of these sound phenomena instantly signals a room in which poor acoustical balance frustrates sound intelligibility. Our purpose here is to tell you why—and what can now be done about it.

To hear and be heard in a room: Sound intelligibility is the only valid measure of satisfactory room acoustics. It depends entirely on achieving the proper balance of sound reverberation and sound diffusion in the room.

Let's take sound reverberation: Not all of the energy of sound in a room reaches a listener directly. That makes it necessary to have the room's surfaces reflect back portions of the original energy to reinforce the sound. The amount of reflection is critical. Too much—and the reverberation time increases to a point where echo, flutter and other confusions of the first sound occur. Too little—and the room is dead. Sound falls away at once.

And consider sound diffusion: When sound energy spreads through a room and rebounds from its surfaces, it creates a pattern of sound pressure throughout the room. A relatively uniform sound pressure pattern represents good diffusion—the second critical consideration in room acoustics. Improper diffusion of sound leads to poor efficiency of absorbing materials in the room—and to poor intelligibility.

The problem of control: Sound absorption can control both important factors in room acoustics: reverberation time and diffusion. Reverberation time is controlled by the *amount* of absorption, diffusion by its distribution.

Present controls are only partial measures: Commonly used acoustical treatments rely entirely on a continuous mass of absorbing material placed on one surface of a room—generally to cover the ceiling. This reduces the probability of achieving good acoustical balance in a room. One reflective surface is eliminated completely and the others are not controlled at all. The room is acoustically lopsided. A handclap will reveal it every time.

The solution has long been known: The key is placement of patches of absorption on a room's reflective surfaces to take advantage of the so-called area effect. The result is a balance between reflection and absorption that promotes controlled reinforcement of sound.

Orthodox acoustical treatment has made it virtually impossible to take advantage of the patch technique. Practical application of the patch technique requires higher unit absorption efficiency than commonly used acoustical materials provide. Thus, you have until now been unable to utilize the most effective means of achieving good acoustics in a room. *Now you can do something about it.*

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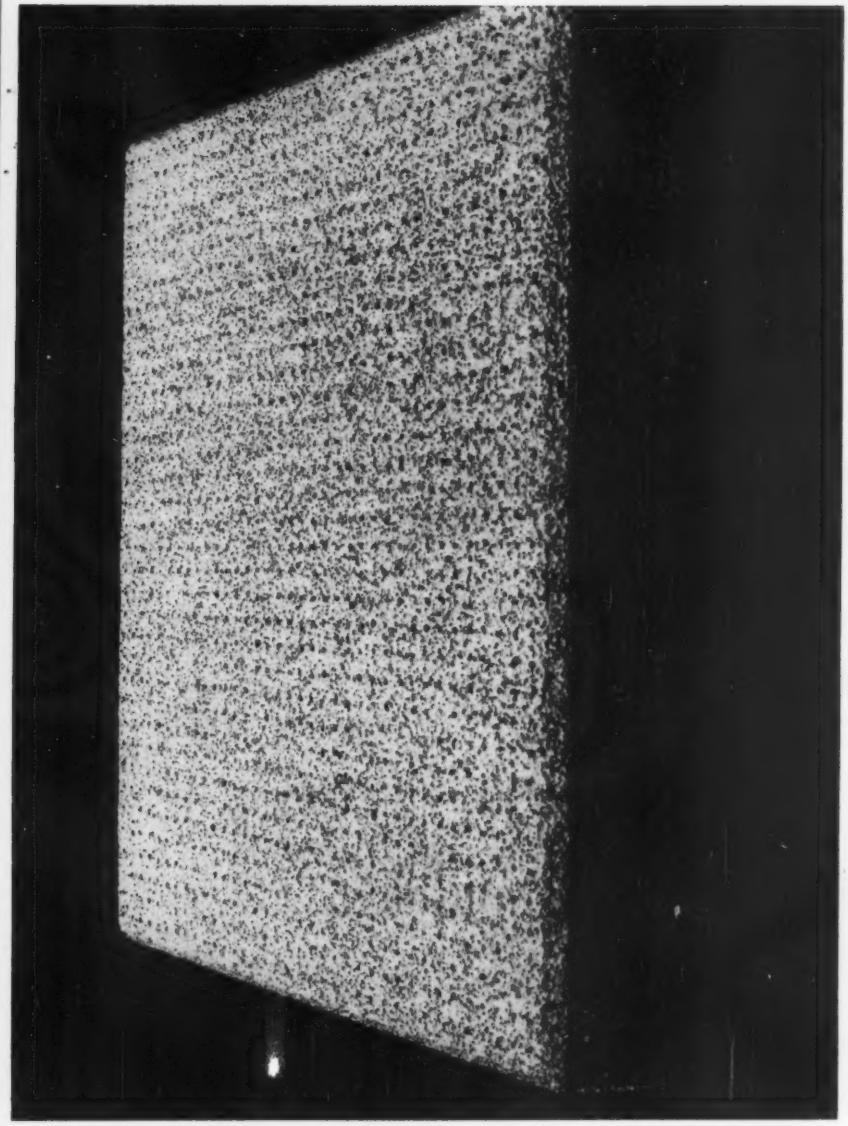

properties. His argument: open its normally closed cell structure to expose the intricate labyrinth of chambers within the material. Do this, he said, and cellular glass could be used as the first material to make practical the patch technique.

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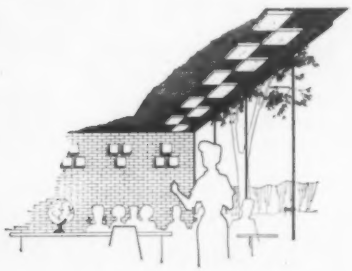

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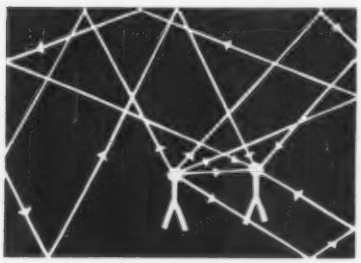

. . . to hear and be heard in a room

pc

(*Continued From Page* 152)

with an architect simply because he is dissatisfied, but only for cause.[10]

The cases just cited illustrate that the architect's right to recover is to be found in his contract. Recovery is dependent upon the *existence* of a contract, as well as the *legality* of that contract. If no contract exists, or if the existing contract is illegal, courts are generally in agreement that there can be no recovery.

Recovery Under Quantum Meruit. One exception is to be noted to the general rule that an architect cannot recover under a contract that is illegal. On occasion, courts, while not permitting recovery under the statute, will permit recovery under *quantum meruit* [not on the contract] — *i.e.* recovery for the reasonable value of the goods and services — where the contract has been completed and the other party has accepted benefits under it.[11] In Colorado, for example, where the law did not permit a school district to enter into a contract with an architect until after the voters' approval of bonds needed to finance the proposed improvement, a court permitted an architect to recover where the contract had been entered into prior to the election.

A Texas court, in a similar type of case where a school board entered into a contract with an architect before the bonds were voted and in violation of the statute, also permitted recovery under *quantum meruit*.[12] On appeal, recovery was denied on the ground that the statute was controlling.[13]

In New Jersey, under somewhat different circumstances, an architect was permitted to recover under *quantum meruit*.[14] In this case an architect brought an action to recover from a school board "for the preparation of plans, specifications and estimated costs of construction of certain school additions and a proposed new school." The board contended the amount was unreasonable and that "it includes compensation for services which were unnecessary under the circumstances, and hence *ultra vires* and not within the power of the board of education to contract for."

The services referred to consisted of the preparation of supplemental material consisting of schematic drawings, posters and models that were used in presenting the plan to the voters, preparatory to a referendum vote which rejected the proposition. The court held that the services were not "*ultra vires* the defendant board," as it had "implied power to incur reasonable expenses for obtaining such expert opinion as was necessary to furnish a basis for an accurate estimate of the cost of the projects." Furthermore, it held that the board had the duty of informing the voters with respect to a matter requiring their approval. Consequently, the board ruled that the architect could recover under *quantum meruit* anyway, saying: "The principle of *ultra vires* will not be enforced to give one an unconscionable advantage over another, and municipalities, like individuals, are bound by principles of fair dealing."

Recovery Under an Abandoned Contract. Where a contract is abandoned, regardless of the cause, and the architect is permitted to recover, the amount of his recovery becomes paramount. Here again, the courts look to the contracts. Because the facts at issue, and the contracts themselves, are not alike in any two cases, general principles of law

(*Continued on Page* 158)

[10]Gould *v.* McCormick, 134 P. 676, 57 Wash. 61 (1913).

[11]Mountjoy and Frewen *v.* Cheyenne County High School District, 240 P. 464, 78 Colo. 162 (1925); Hankin *v.* Board of Education of Hamilton Township, 135 A. (2d) 329, 47 N. J. S. 70 (1957); Sleight *v.* Board of Education of City of Paterson, 170 A. 598, 112 N. J. L. 422 (1934); Horgan and Slattery *v.* City of New York, 100 N. Y. S. 68, 114 App. Div. 555 (1906); Page *v.* Harlingen Independent School District, 23 S.W. (2d) 829 Texas (1929).

[12]Page *v.* Harlingen Independent School District, 23 S.W. (2d) 829 Texas (1929).

[13]Harlingen Independent School District *v.* Page, 485 S.W. (2d) 983 (1932).

[14]Hankin *v.* Board of Education of Hamilton Township, 135 A. (2d) 329, 47 N. J. S. 70 (1957).

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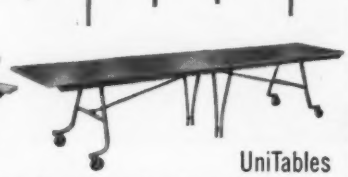

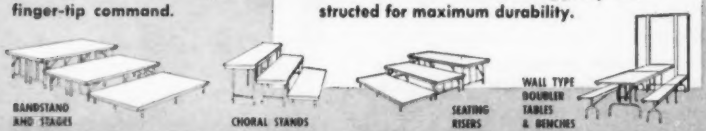

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(*Continued From Page* 156)

applicable to all cases are difficult, if not impossible, to arrive at. Nevertheless, some generalizations appear warranted.

For one thing, it appears that the matter of deciding the amount, if any, that an architect is entitled to recover under an abandoned or breached contract is, if the trial is held before a jury, one for the jury,[15] and the court cannot overrule the decision arrived at by the jury.[16]

As was stated, in case of abandonment of a contract, courts generally refer to the contract itself for guidance in arriving at their decisions regarding the amount of recovery. Where contracts make specific provisions for the payments of certain amounts at specified times, they can be of immeasurable value in determining the amount due.

A Nebraska case is in point. Under the terms of a contract, the architect was to receive 1½ per cent of the cost of the structure following the completion of the general drawings and specifications; another ½ of 1 per cent following the completion of the detailed drawings, and, finally, another 1 per cent after the completion of the structure. The contract provided that in case of abandonment the charge would be based on the lowest responsible bid.

The plans were submitted and accepted by the board, and the estimated cost was placed at $90,000. The board, desiring to build a cheaper building, ordered the architect to prepare other plans, which he did. These were accepted by the board, which then advertised for bids. The lowest was $75,515.

All plans were later abandoned, and the architect brought suit to recover for the preparation of general drawings and specifications for the more expensive building and also for general drawings and specifications and detailed drawings for the cheaper building.[17] The court held the board was liable and the architect could recover; but it limited his recovery to the drawing of plans and specifications for the cheaper of the two buildings, the one on which bids were received.

Determining the Amount of Recovery. In Pennsylvania, a somewhat similar case was before the courts.[18] Here, the architect's contract provided for a payment of 1 per cent when the preliminary plans were accepted; another 2 per cent when the working drawings were completed and adopted; another 1 per cent when the contract was awarded; another one per cent in monthly installments prorated in accordance with the architect's monthly certificate for the payment of the contractors, and a final 1 per cent when the building was completed and accepted.

The contract also provided that the board could reject any or all bids, and that the board could cancel it on 15 days' notice, in which case the architect was "entitled as full compensation to the percentages then due." When the bids were opened, it was found that the cost was in excess of the architect's estimated cost because of inflation growing out of World War I, and the board decided to postpone building until conditions in the building trade became more normal. In the interim, one of the architects died, and the board rescinded the contract.

In an action brought to decide the amount of recovery, the lower court held the architect was entitled to 6 per cent, and the board appealed. The higher court overruled the lower court. In so doing it found it necessary to interpret the contract. It held that the words "percentages then due," as used in the contract, meant that if the building was not constructed "only 3 per cent was to

(*Continued on Page* 160)

[15]Driscoll *v.* Council Bluffs Independent School District, 16 N.W. 291, 61 Iowa 426 (1883); Davis *v.* School District of City of South Omaha, 122 N.W. 38, 84 Neb. 858 (1909).

[16]Davis *v.* School District of City of South Omaha, 122 N.W. 38, 84 Neb. 858 (1909).

[17]Fiske *v.* School District of the City of Lincoln, 78 N.W. 392, 58 Neb. 163 (1899).

[18]Orth *v.* Board of Public Education of School District of Pittsburgh, 116 A. 366, 272 Pa. 411 (1922).

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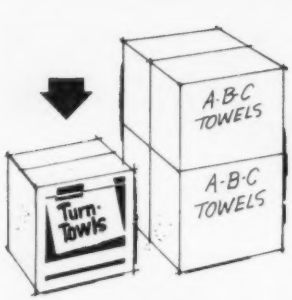

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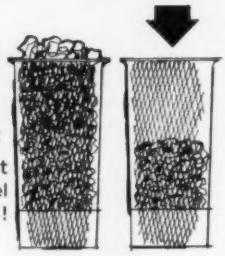

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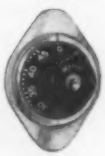

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(*Continued From Page* 158)

be paid for the preliminary study and the preparation of working drawings and specifications." It also held that it was "erroneous to estimate the 3 per cent on the excessive cost, arising out of the unusual conditions prevailing," but that it should be based on the architect's estimated cost.

In Illinois a contract in question provided that if any "work" designed or specified by the architect should later be abandoned, the architect would be paid for the services rendered on account of it. Later, when the architect was replaced with another, and he brought an action to recover, the point at issue was, really, the interpretation of the contract. The court held that the word "work," as used in the contract, had reference to the architect's work product — his plans and specifications — rather than the construction project.

It thus appears that, in case a contract is abandoned, the architect may collect for the services he has performed up to the date of abandonment, in the absence of anything to the contrary in the contract.

The concluding article will define the recovery rights of the architect under breached contract, when cost of construction exceeds cost of building specified in contract, when contract precedes the bond issue, and when the cost of the building exceeds the indebtedness limit.

Shannon Resigns from N.S.B.A. Webb Named Acting Successor

EVANSTON, ILL. — The resignation of W. A. Shannon as executive director and appointment of Harold V. Webb as acting executive director of the National School Boards Association were announced simultaneously by Roy O. Frantz, president, in a release dated January 15. Mr. Shannon's resignation is effective as of July 1, but he is taking a leave of absence beginning January 15.

Mr. Shannon became executive secretary of N.S.B.A. in July, 1956. He succeeded Edward M. Tuttle, who had been executive secretary since 1949. Previously, Mr. Shannon had been superintendent of schools at Morristown and Springfield, Tenn.

Dr. Webb joined the N.S.B.A. staff in July, 1958, for responsibilities in field services and for management of convention exhibits. He was named associate executive director in 1959. He is a former teacher and superintendent. He also had been head of the department of school services at the University of Wyoming, while serving concurrently as executive secretary of the Wyoming School Boards Association.

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About People

Changes in Superintendencies

NORTHEAST

David P. Reno, high school principal, General McLane Joint School District, McKean, Pa., to supervising principal, Borough School District, Coraopolis, Pa.

Charles E. Lehman, junior-senior high school principal, Suburban Joint School District, York, Pa., to supervising principal there, succeeding **Howard A. Michener,** who goes to Pottsgrove School District, Pottstown, Pa.

Phillip M. Jones, junior-senior high school principal, Area Joint School District, Smethport, Pa., to superintendent, Cameron County, Emporium, Pa.

Charles E. Davis, superintendent, Borough School District, Hanover, Pa., to supervising principal, Monroe-Woodbury Central School District, Central Valley, N.Y.

John W. Day, assistant superintendent, Keene, N.H., to superintendent there.

Kenneth Winfield, Monroe Township School District, Jamesburg, N.J., to Clark, N.J.

Bernard F. Haake, assistant superintendent for business affairs, Schenectady, N.Y., to assistant superintendent for special services there.

John D. Scheller, principal, Amherst High School, Buffalo, N.Y., to supervising principal, Amherst Central School, Snyder, N.Y., succeeding **Phillip A. Schweickhard,** who retires after 31 years there.

Erwin Dingman, associate superintendent, Buffalo, to supervising principal, Central School District, Bellport, N.Y., succeeding **William H. Curtis,** who becomes superintendent, Manchester, Conn.

H. W. Vanderhoof, supervising principal, Elba, N.Y., to superintendent, Genesee County, Batavia, N.Y., effective August.

Alton U. Farnsworth, supervising principal, Central School District, Guilderland, N.Y., to superintendent there.

David M. Russell, Exeter, R.I., to Ware, Mass.

William H. Risser, principal in charge, Oakland, N.J., to superintendent there.

Maurice Wollin, principal, Ditmas School No. 62, Brooklyn, N.Y., to assistant superintendent, Districts No. 53 and 54, Borough of Richmond, Tompkinsville, N.Y. **John W. McCarthy,** acting assistant superintendent there, to assistant superintendent, Districts No. 26 and 28, Brooklyn, N.Y.

MIDWEST

Paul W. Hydell, assistant superintendent, Chillicothe, Ohio, to superintendent there, succeeding the late **Ellis B. Hatton.**

Eugene W. Eininger, Waseca, Minn., to Chisholm, Minn.

Elven E. Duvall, professor, Western Michigan University, Kalamazoo, to assistant superintendent, Grosse Pointe, Mich.

Albert B. Harvey, assistant superintendent, Cleveland Heights, Ohio, to superintendent there. He succeeds the late **O. E. Hill.**

Edwin C. Treherne, Crawford County, Bucyrus, Ohio, to Northmont Local School District, Englewood, Ohio.

SOUTH

Tom Orr, junior high school principal, Man, W. Va., to superintendent, Logan County, Logan, W. Va.

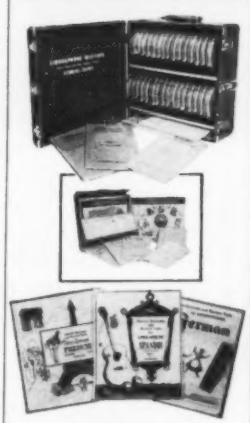
Marvin L. Carper, Martinsville, Va., to Lynchburg, Va., succeeding **Paul M. Munro,** who retires effective July 1, 1961.

Otis Goodrich, high school principal, Davis, Okla., to superintendent, Lexington, Okla.

WEST

Charles F. Parsons, assistant superintendent, Placer County, Auburn, Calif.,

(Continued on Page 168)



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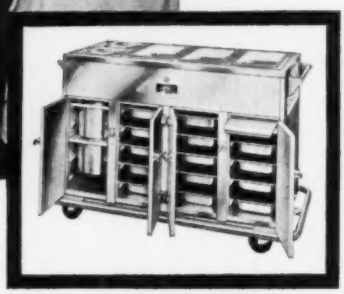

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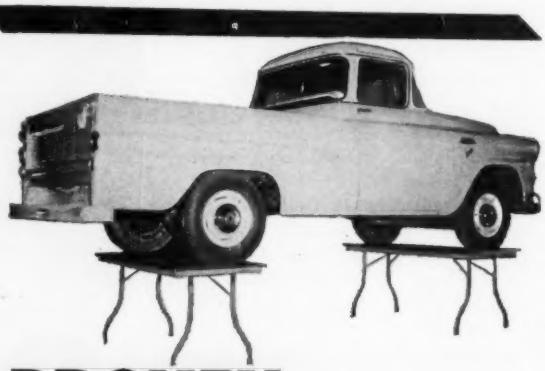

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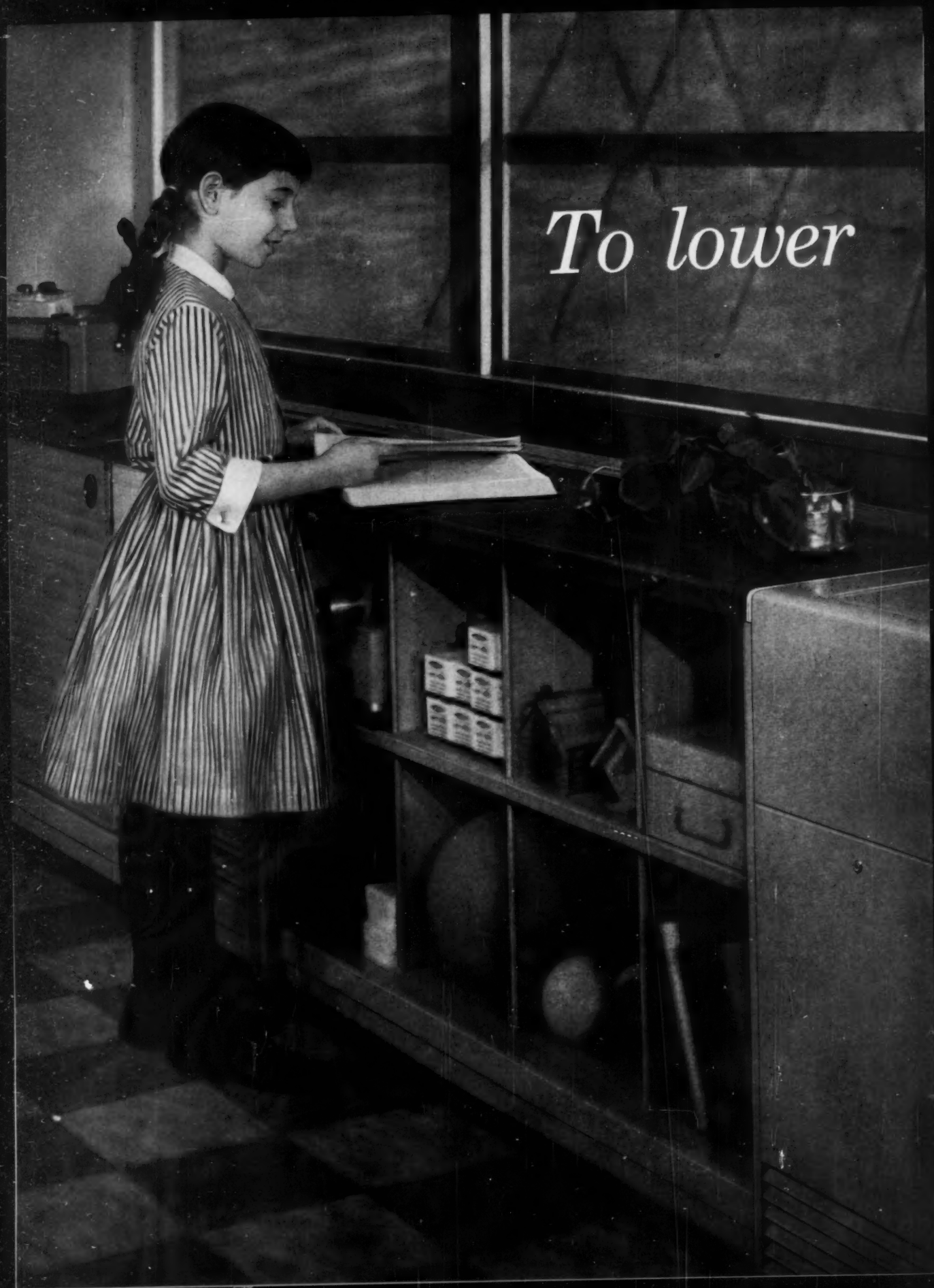
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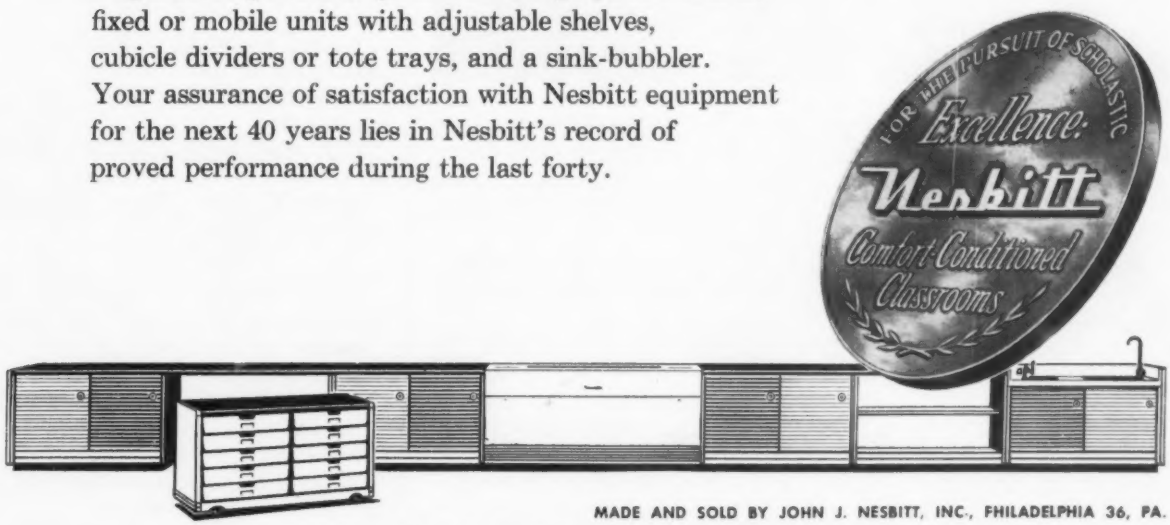

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About People

(*Continued From Page* 163)

to superintendent, Joint Union High School District, Roseville, Calif.

Palmer G. Campen, assistant superintendent in charge of business, Centralia Elementary School District, Buena Park, Calif., to superintendent there.

Scott Milligan, superintendent, Longview, Wash., to assistant superintendent in charge of administration and finance, Washington State Department of Public Instruction, Olympia. He has served as superintendent at Longview since 1953.

Other Appointments . . .

Max Penrod, area director of Indian schools, Juneau, Alaska, to Chemawa Indian School, Chemawa, Ore., succeeding **Victor Hill,** who becomes area director of Indian schools in Oregon, Washington and Idaho, with offices in Portland, Ore.

Carleton W. Washburne, former chairman of the department of education, director of the division of graduate studies, and director of teacher education, College of the City of New York, Brooklyn, has been named distinguished professor of education, Michigan State University, East Lansing.

Henry M. Gunn, superintendent, Palo Alto, Calif., to professor of school administration, State College, San Jose, Calif., effective June 1961.

Earl L. Boggs, dean, Longwood College, Farmville, Va., to dean, college of education, West Virginia University, Morgantown. He succeeds E. K. Feaster, who becomes president of Fairmont State College, Fairmont, W. Va.

Resignations . . .

L. A. Behrends, Cass County, Plattsmouth, Neb.

Fred Ambellan, Levittown, N.Y., effective June 30.

Quintin E. Cramer, Akron-Fairgrove School District, Akron, Mich.

Eberly Hammack, Northwest Local School District, Cincinnati, Ohio.

Glen H. Dysinger Sr., Centralia Elementary School District, Buena Park, Calif., effective June 1961.

H. Joseph Ragg, West Milford, N.J., after 12 years there.

Jerome Edwards, superintendent of Yorba Linda public schools, Yorba Linda, Calif., has resigned effective June 30, 1961.

Hazel B. Leicht, La Crosse County, La Crosse, Wis., effective July.

Charles W. Lafferty, Oak Park, Ill., effective June 30.

Retirements . . .

Merle Fuller, Elementary School District, Chowchilla, Calif., effective June 30.

Charles H. Williams, Elmwood Place, Ohio, effective in July, after 17 years there.

Peyton Cain, Alpine, Tex., effective June 30.

Jonathan W. Edwards, Portland, Ore., effective July 31, 1961.

Lee H. Lamb, Hastings, Mich., effective June 30.

L. J. Smith, superintendent at Massillon, Ohio, effective July 31.

George A. Barber, Genesee County Supervisory School District, Batavia, N.Y., effective August 1961, after 32 years there.

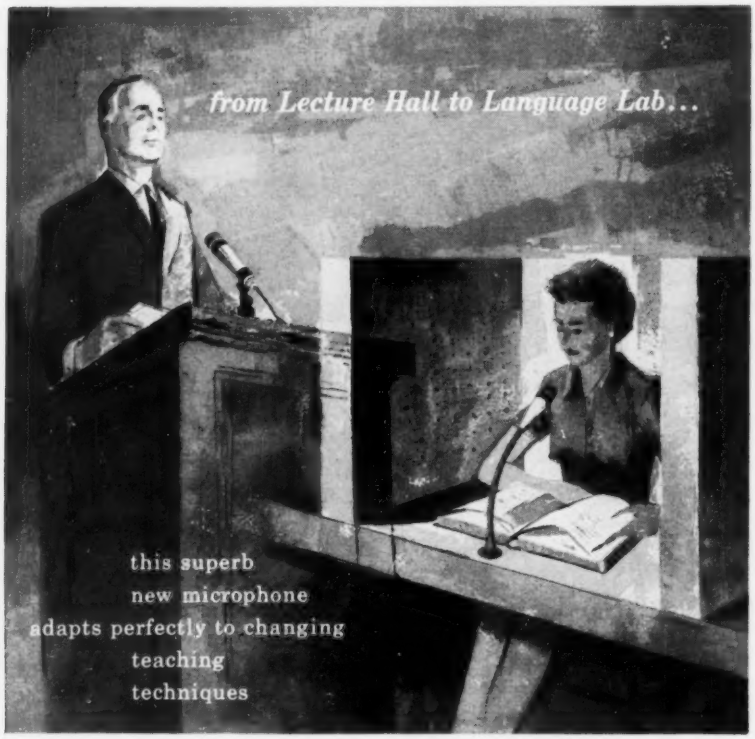
George H. Flamson, Paso Robles, Calif., effective summer 1961, after 16 years there.

D. E. Moore, Independent School District, Karnes City, Tex., effective July 1.

Deaths . . .

G. W. McDaniel, former superintendent, Clay County, Henrietta, Tex.

James William Mosley, 82, retired superintendent, Collin County, McKinney, Tex.



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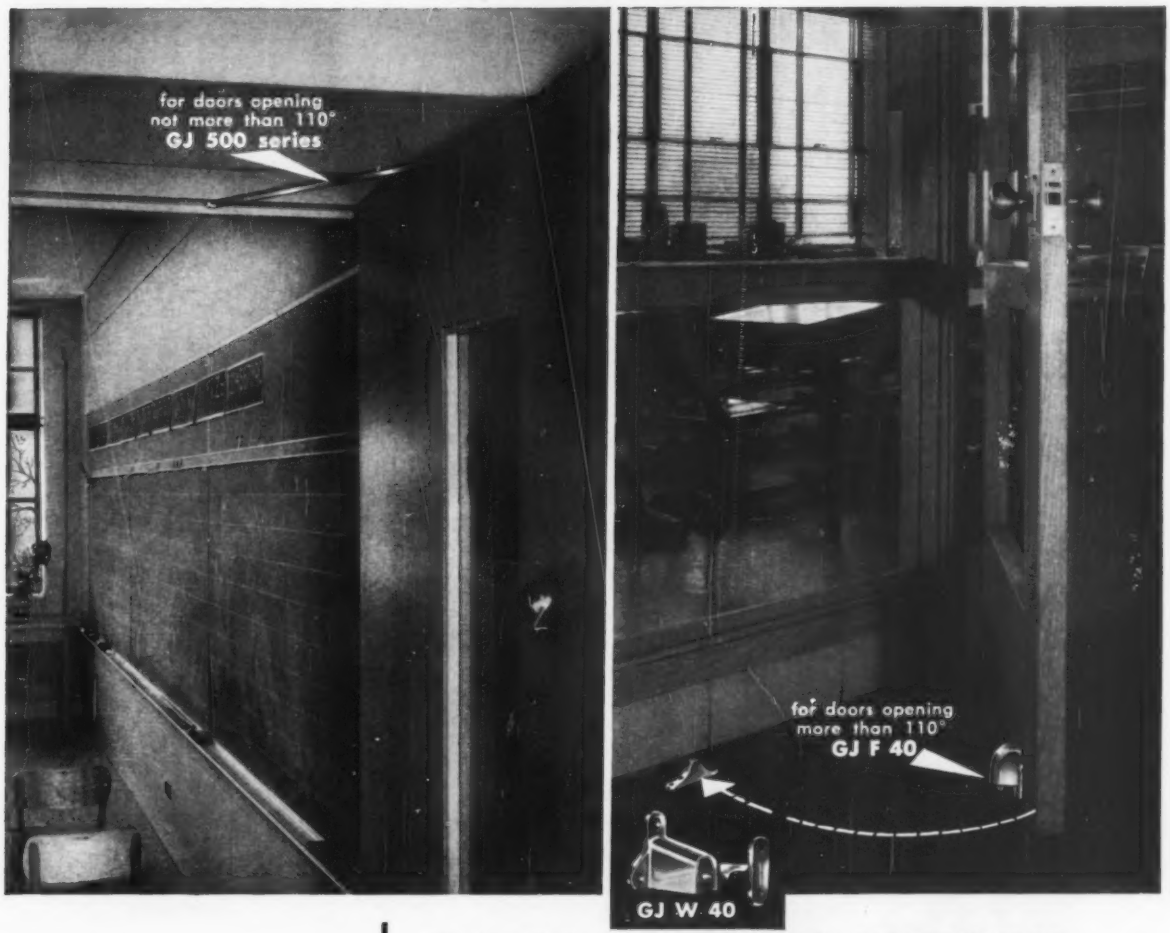

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Sinclair Lane Elem. School, Baltimore, Maryland. Edward J. Hofstetter — architect

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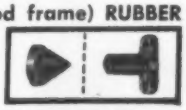

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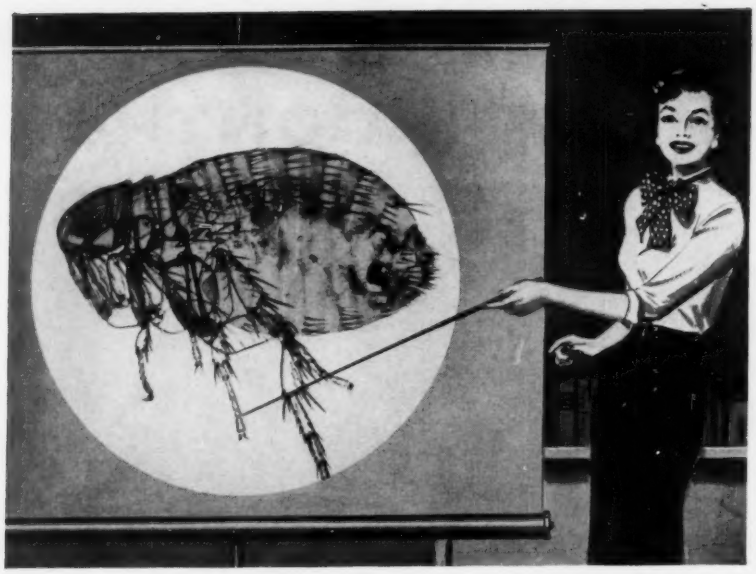

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Khrushchev and the Central Committee Speak on Education. George S. Counts. University of Pittsburgh Press, Pittsburgh 13.

Revised Curriculum in Japan. Ministry of Education, Tokyo. Pp. 66.

CURRICULUM

Administrator's Handbook of the Secondary School Curriculum of New York State. University of the State of New York, Albany. Pp. 72.

DIRECTORIES

The American Association of Colleges for Teacher Education, 1960. A.A.C.T.E., N.E.A. Pp. 28.

EDUCATIONAL PHILOSOPHY

The Creative Arts in American Education. Thomas Munro, Western Reserve University, and Herbert Read. Harvard University. Pp. 65. $2.50.

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Judging and Improving the Schools: Current Issues. California Teachers Association, 1705 Murchison Dr., Burlingame. Pp. 15.

The Self-Contained Classroom. Edited by Edith Roach Snyder, Webster School, Pontiac, Mich. A.S.C.D., N.E.A. Pp. 88. $1.25.

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Understanding Intergroup Relations. Jean D. Grambs, University of Maryland. N.E.A. Pp. 32. 25 cents.

JUNIOR HIGH SCHOOLS

Recommendations for Education in the Junior High School Years. James B. Conant. Educational Testing Service, 20 Nassau St., Princeton, N.J. Pp. 46. 50 cents.

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Volume II: Elementary and Secondary School Libraries of the Pacific Northwest. Edited by Morton Kroll, University of Washington. University of Washington Press, Seattle 5. Pp. 322. $6.75.

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Mechanical-Electrical Equipment Handbook for School Buildings. Harry Terry, *Who's Who in Engineering.* John Wiley & Sons. Pp. 398. $9.50.

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Exploring Independent Reading in the Primary Grades. Esther E. Schatz, Roberta Utterback, Mary E. Wilsberg, and Alexander Frazier. Ohio State University, Columbus 10. Pp. 70. $1.

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How To Create a Better Understanding of Our Schools. Daniel Ungaro, Saratoga, Calif. T. S. Denison and Co., Inc., 321 5th Ave. So., Minneapolis 15. Pp. 111. $3.

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Research in Reading During Another Four Years. Educational Records Bureau, 21 Audubon Ave., New York 32. Pp. 218.

Educational Research. UNESCO. Pp. 25.

Research Studies in Education, 1959. Edited by Stanley Elam, Phi Delta Kappa, Inc., 8th St. & Union Ave., Bloomington, Ind. Pp. 138. $3.50.

Educational Research for Classroom Teachers. John B. Barnes, Arizona State University. G. P. Putnam's Sons.

Cooperative Research Projects. Fiscal 1959. U.S. Govt. Prtg. Off. Pp. 53. 25 cents.

SCHOOL LAW

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School Planning Laboratory. 1st annual report. Stanford University, Stanford, Calif. Pp. 13.

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Problem-Solving Methods in Science Teaching. Lester C. Mills and Peter M. Dean, Science Manpower Project, Teachers College, Columbia. Pp. 88. $1.50.

Guide to Education Aids Available From the Chemical Industry. Manufacturing Chemists' Association, Inc., 1825 Connecticut Ave., N.W., Washington 9, D.C. Pp. 14. Free.

Looking Ahead in Science. Calif. State Prtg. Off., Sacramento. Pp. 88.

SECONDARY EDUCATION

Evaluative Criteria, 1960. National Study of Secondary School Evaluation, 1785 Massachusetts Ave., N.W., Washington 6, D.C. Pp. 376. $5.

SPECIAL EDUCATION

The Adjustment of the Partially Seeing Child in the Regular Classroom. University of the State of New York, Albany. Pp. 20.

Working With Superior Students. Edited by Bruce Shertzer, North Central Association of Colleges and Secondary Schools. Science Research Associates, Inc., 57 W. Grand St., Chicago 10. Pp. 364.

The Gifted Student. U.S. Govt. Prtg. Off. Pp. 83. 35 cents.

STATISTICS

Salary Schedules, Classroom Teachers, Urban Districts 100,000 and Over in Population, 1960-61. 20th biennial salary survey. N.E.A. Pp. 31. 50 cents.

Adult Education in Public Schools, 1940-56. Marthine V. Woodward, U.S.O.E. U.S. Govt. Prtg. Off. Pp. 14. 20 cents.

Statistical Handbook of Science Education. U.S. Govt. Prtg. Off. Pp. 94. 55 cents.

Salaries of Certificated Employees in California Public Schools. 1959-60. Prepared by Henry W. Magnuson and Peter J. Tashnovian, California State Department of Education. Calif. State Prtg. Off., Sacramento. Pp. 14.

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Statistics on Special Education. UNESCO. Columbia University. Pp. 154. $2.

SUPERVISION

Education Supervision in Principle and Practice. Hanne J. Hicks, Indiana University. Ronald Press. Pp. 425. $6.25.

Case Studies in School Supervision. J. Bernard Everett, Newton, Mass.; Mary Downing, elementary education consultant, and Howard Leavitt, Boston University. Rinehart. Pp. 56. $1.

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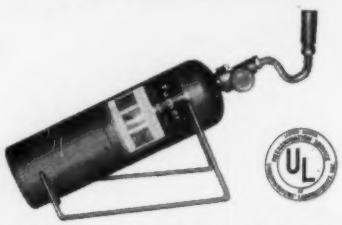

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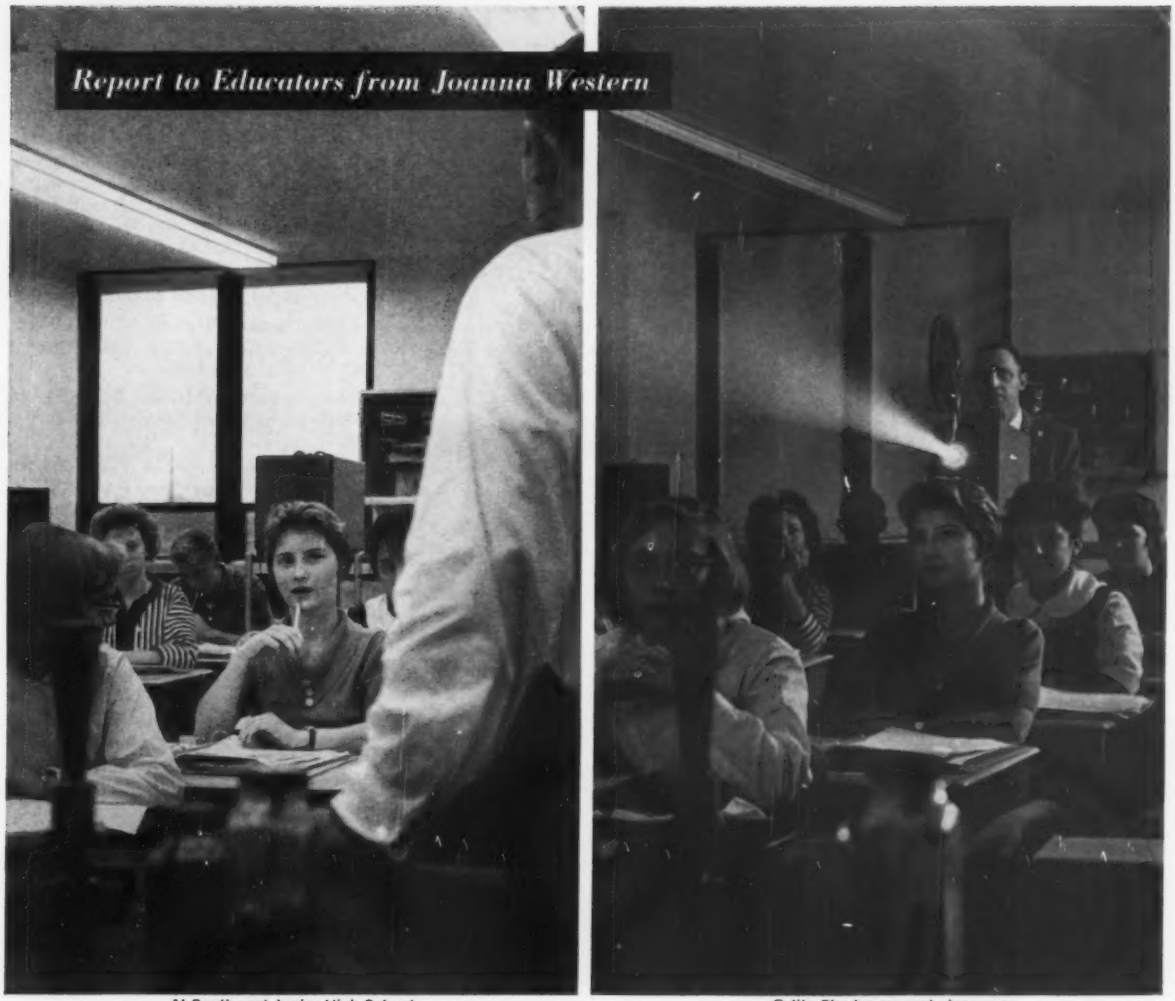

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TESTING

The Staff Evaluate the School's Testing Program. George E. Hill, Ohio University, Athens. Pp. 30.

YEARBOOKS

Recent Research and Developments and Their Implications for Teacher Education. 30th yearbook. American Association of Colleges for Teacher Education, N.E.A. Pp. 285. $2.50.

Citizenship and a Free Society: Education for the Future. 30th yearbook. Edited by Franklin Patterson, Tufts University. National Council for the Social Studies, N.E.A. Pp. 292. Paperbound, $4; clothbound, $5.

National Society for the Study of Education. 59th yearbook. Part I: Rethinking Science Education. Prepared by the yearbook committee headed by J. Darrell Barnard, professor of education, New York University. Pp. 338. Part II: The Dynamics of Instructional Groups. Committee headed by Gale E. Jensen, University of Michigan. Pp. 280. Cloth, $4.50 each; paper, $3.75 each. N.S.S.E., 5835 Kimbark Ave., Chicago 37.

VOCATIONAL EDUCATION

Vocational Education for Rural America. 1958-59 yearbook. Edited by Gordon I. Swanson, associate professor, college of education, University of Minnesota. Department of rural education, N.E.A. Pp. 308. $4.

Technical and Vocational Education in the U.S.A. Educational Studies and Documents No. 36. A bibliographical survey prepared by the U.S. Office of Education. UNESCO. Pp. 24. 75 cents.

FROM SCHOOL DISTRICTS

30th Annual Report, 1959-60. Nassau County Central High School District No. 2, Merrick, N.Y. Pp. 14.

Superintendent's Annual Report, 1960. Independent School District, Dallas. Pp. 38.

Annual Report for the Year 1959-60. Edmund H. Thorne, West Hartford Public Schools, West Hartford, Conn. Pp. 37.

Annual Report, 1960. Board of Education, School District No. 202, Evanston, Ill. Pp. 120.

Sixty-First Annual Report of the Superintendent of Schools City of New York. Pp. 336. **Toward Better International Understanding.** Pp. 253. $1.50. **Teaching Map and Globe Skills.** Pp. 41. 50 cents. **Teaching Music in the Elementary Grades.** Pp. 139. $1. **Aviation Mechanics for Vocational High Schools.** Pp. 133. Board of Education of the City of New York, 110 Livingston St., Brooklyn 1, N.Y.

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What's New. Annual report, 1959-60. Board of Education, 317 Poplar Ave., Memphis 3, Tenn.

A Five-Year School Building and Future Sites Program 1961-65. Board of School Directors, Milwaukee. Pp. 95.

Our Children in Kindergarten. A guide for teachers. Pp. 109. **Arithmetic Supplement: Problem Solving.** Prepared by the subcommittee on problem solving for the arithmetic curriculum committee of the elementary schools. Pp. 19. School District of Philadelphia, Philadelphia.

Twenty Years of Growth in School Enrollments and Buildings. Annual report, 1958-59. Board of Education, Madison, Wis. Pp. 98.

Facing the Challenge. 68th and 69th annual reports. Board of Education, Salt Lake City, Utah. Pp. 51.

Speech for the Retarded Child. A teacher's handbook. Curriculum Bulletin No. 7, 1958-59 Series. Publications sales office, New York City Board of Education. Pp. 98. 75 cents.

Superintendent's Annual Report to the Board of Education, 1959-60. Albuquer-

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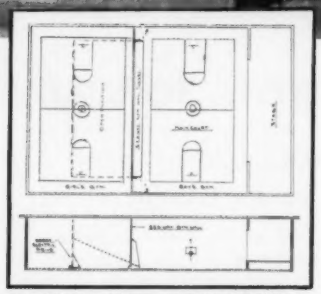

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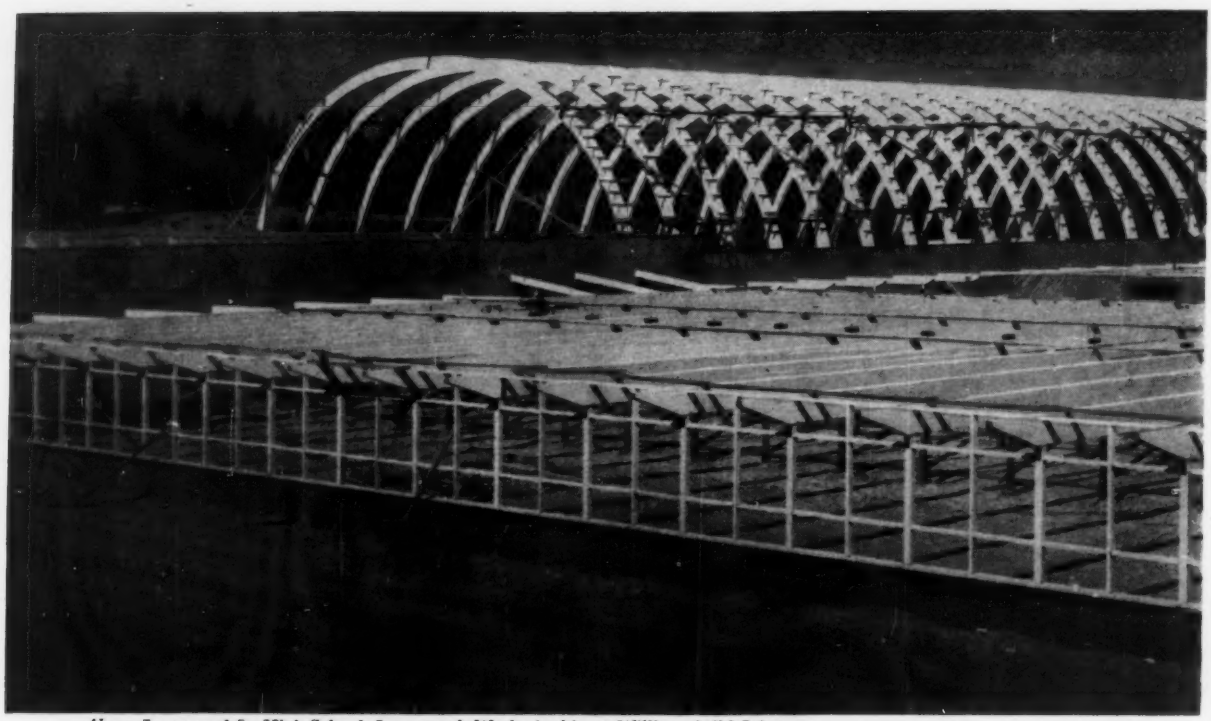
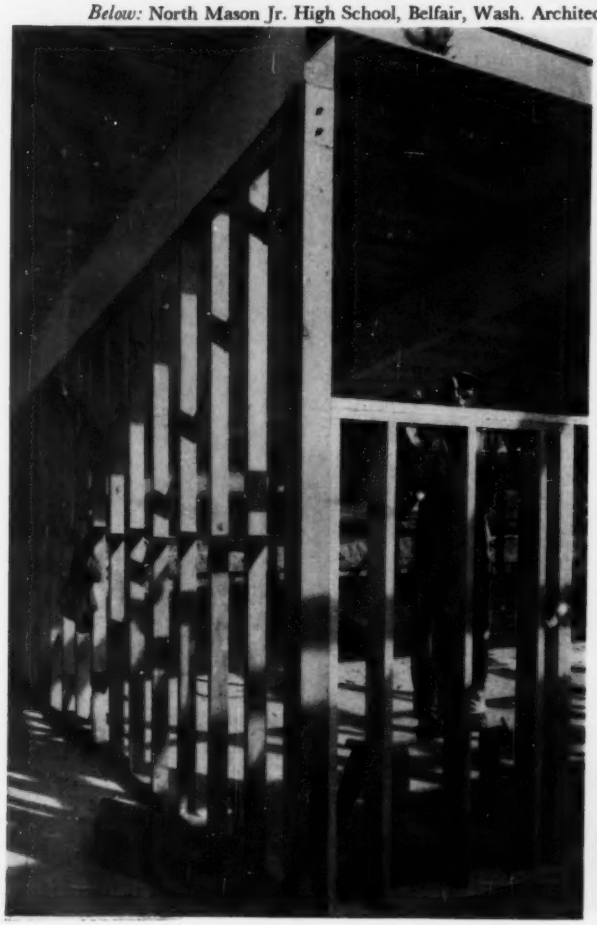
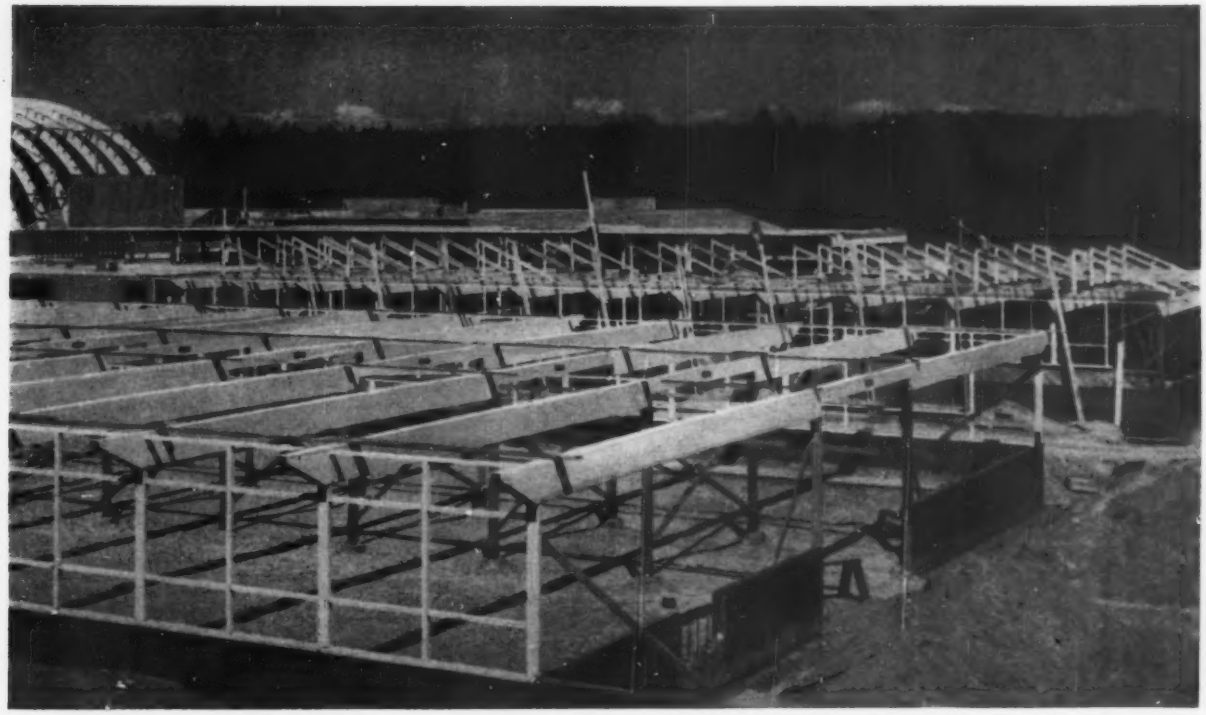


Above: Lynnwood Jr. High School, Lynnwood, Wash. Architect, William Arild Johnson.

Below: North Mason Jr. High School, Belfair, Wash. Architect, William Arild Johnson.





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que Public Schools, P.O. Box 1719, Albuquerque, N.M. Pp. 24.

Language Arts in Custer County High School. Charles E. Hood, Custer County High School, Miles City, Mont. Pp. 12.

A Guide to the Teaching of American History and Government. Pp. 85. **A Guide to the Teaching of the Mechanics of English.** Pp. 42. Philadelphia Public Schools, Philadelphia.

Sight and Insight. Pp. 128. New York City Board of Education, 110 Livingston St., Brooklyn 1, N.Y.

We Build. Annual report. Chicago Public Schools, 228 N. LaSalle St., Chicago 1. Pp. 57.

Report of the Board of School Commissioners of Baltimore City, 1958. Baltimore Public Schools, Baltimore. Pp. 283.

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The Community Junior College. James W. Thornton Jr., San Jose State College. John Wiley & Sons, Inc. Pp. 294. $5.95.

Labor and the Public. Maxwell S. Stewart, Public Affairs Pamphlets, 22 E. 38th St., New York 16. Pp. 20. 25 cents.

Organization, Functions and Services of the State Department of Education. Arkansas State Department of Education, Little Rock. Pp. 104.

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For the Man with the Precious Cargo. Independent School District No. 281, Robbinsdale 22, Minn.

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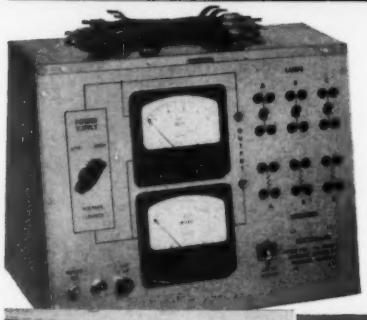

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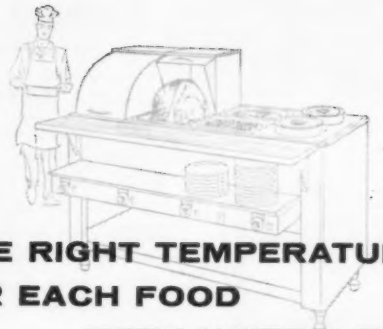

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11-15. National Association of Secondary-School Principals, Detroit.

22-25. American Educational Research Association, Chicago.

22-25. American Association of Colleges for Teacher Education, Chicago.

23-25. United Business Education Association, Chicago.

25-28. American Association of School Administrators, regional meeting, San Francisco.

MARCH

5-8. Association for Higher Education, Chicago.

11-14. American Association of School Administrators, regional meeting, St. Louis.

12-16. Association for Supervision and Curriculum Development, N.E.A., Chicago.

18-22. Department of Elementary School Principals, N.E.A., Atlantic City.

25-28. American Association of School Administrators, regional meeting, Philadelphia.

25-29. National Science Teachers Association, Chicago.

APRIL

4-7. National Catholic Educational Association, Atlantic City.

4-8. Council for Exceptional Children, Detroit.

5-8. National Council of Teachers of Mathematics, Chicago.

11-15. National Art Education Association, Miami Beach.

16-22. National Library Week.

19-21. Southeastern Association of School Business Officials, Richmond, Va.

24-28. Department of Audio-Visual Instruction, N.E.A., Miami Beach.

JUNE

14-18. American Driver Education Association, Miami Beach.

18-22. National Association of Student Councils, Oklahoma City.

25-30. National Education Association, Atlantic City.

SEPTEMBER

29-Oct. 4. Department of Rural Education, N.E.A., Pittsburgh.

NOVEMBER

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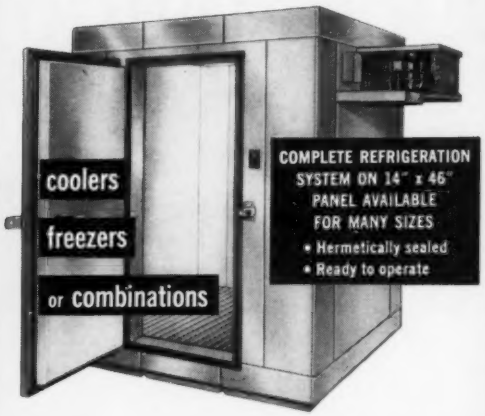

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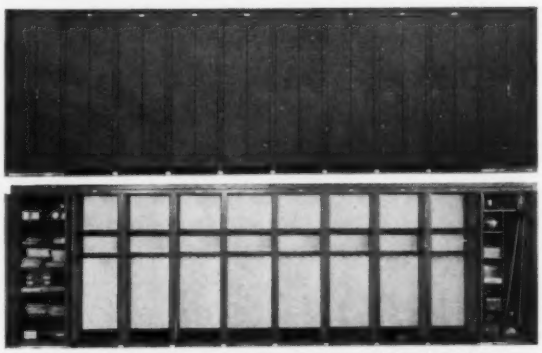

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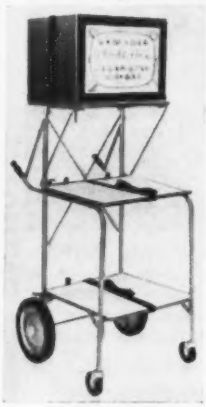

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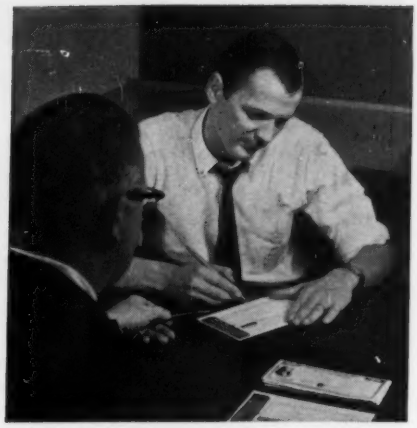

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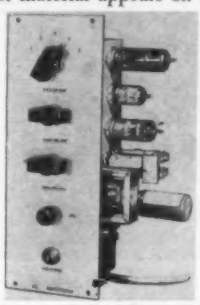

student tapes. Only the student's responses are recorded in continuous sequence, which speeds grading. The Remotester may be housed horizontally in a small individual cabinet close to or on the monitoring console, or mounted vertically on the console control panel. **Monitor Language Laboratories, Div. Electronic Teaching Laboratories, 5034 Wisconsin N.W., Washington 16, D.C.**

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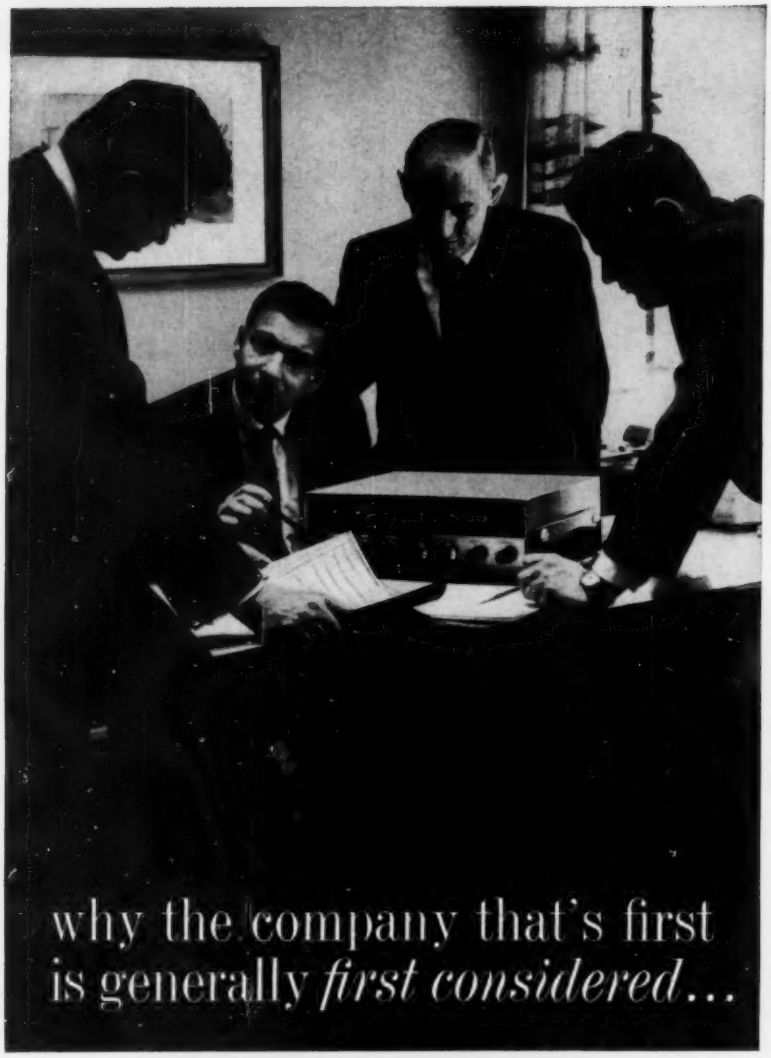
Dictalab Language System Has Quarter-Track Tape

Quarter-track tape, which makes it impossible for language students to record over the instructor's voice and eliminates the necessity for rewinding master reels, is the key to the Dictalab language laboratory system. With four recording channels on the tape, one carries the master voice with the second for the student response whether the tape runs from left to right or right to left. The new Dictalab equipment consists of a teacher console or automatic control center, plus individual sound-protected booths for students. The instructor has full control through monitoring or communicating with any student and the student can not only listen to the teacher but may record

new material from the teacher. Various phases of the Dictalab system may be installed, or the whole comprehensive program. **Dictaphone Corp., 730 Third Ave., New York 17.**

For more details circle #575 on mailing card.

(Continued on page 192)



BOGEN

1st IN SOUND SYSTEMS

Wherever Sound Decisions are important...BOGEN will be specified! For 30 years BOGEN has been the industry's leading contributor to sound development. Engineering and Research *exclusively* in sound has made BOGEN products the Standard of Comparison. Award-winning styling (Milan Triennial Gold Medal), and the world's broadest line, are just two more reasons why well over 1,000,000 BOGEN Sound Systems have been sold to date.

TIX Communophone Intercom

EC School Console

VP20 Transcription Player

BOGEN-PRESTO

Desk NS-2-Paramus, N. J. • A DIVISION OF THE SIEGLER CORPORATION

Molded Plywood Chairs Stack in Minimum Space

Two styles of molded plywood seat and back chairs are offered by Howell. Both stack in minimum space and are attractive and comfortable. Chair No. 223 of walnut woodgrain has a comfortably contoured back and roll front seat with Satin chrome or Bronzite finish on the square tubular frame. The chair is lightweight and the

molded plywood is finished with several coats of lacquer to give a semi-gloss, smooth surface. The No. 219 companion chair has foam-filled seat and back with basic molded plywood frame. Upholstery in Naugahyde supported back vinyl plastic over foam has a protective welt around the edges. Both chairs have wall-saver back legs. **The Howell Co., Div. of Acme Steel Co., St. Charles, Ill.**

For more details circle #576 on mailing card.

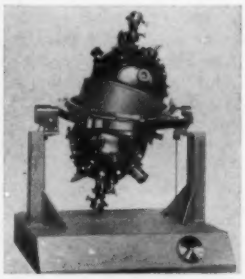
Salt and Sand Sprayed by Power Spreader

A path from four to twelve feet wide can be sprayed with salt and sand for a distance of 1050 feet in one loading of the new Gravely Power Spreader. The interchangeable attachment for the Gravely Tractor is quickly secured or removed by simply adjusting four bolts. **Gravely Tractors, Inc., Dunbar, W. Va.**

For more details circle #577 on mailing card.

Small Planetarium Projects in True Dimension

Developed for high school and junior college instruction, the new small Astro-Dome planetarium optically projects the



northern and southern skies in their true perspective. It can be used with dome screens 16 to 30 feet in diameter. Diurnal motion as well as latitude change and precession can be demonstrated with remotely controlled motor drives on the projector. In addition, the instrument projects planets, the moon, sun and milky way, as well as the 2500 naked eye stars. **Astro-Dome, Inc., 1801 Brownlee Ave. N.E., Canton 5, Ohio.**

For more details circle #578 on mailing card.

(Continued on page 194)

Number six in a series

Vendo report on
Milk Vending
in schools across the nation

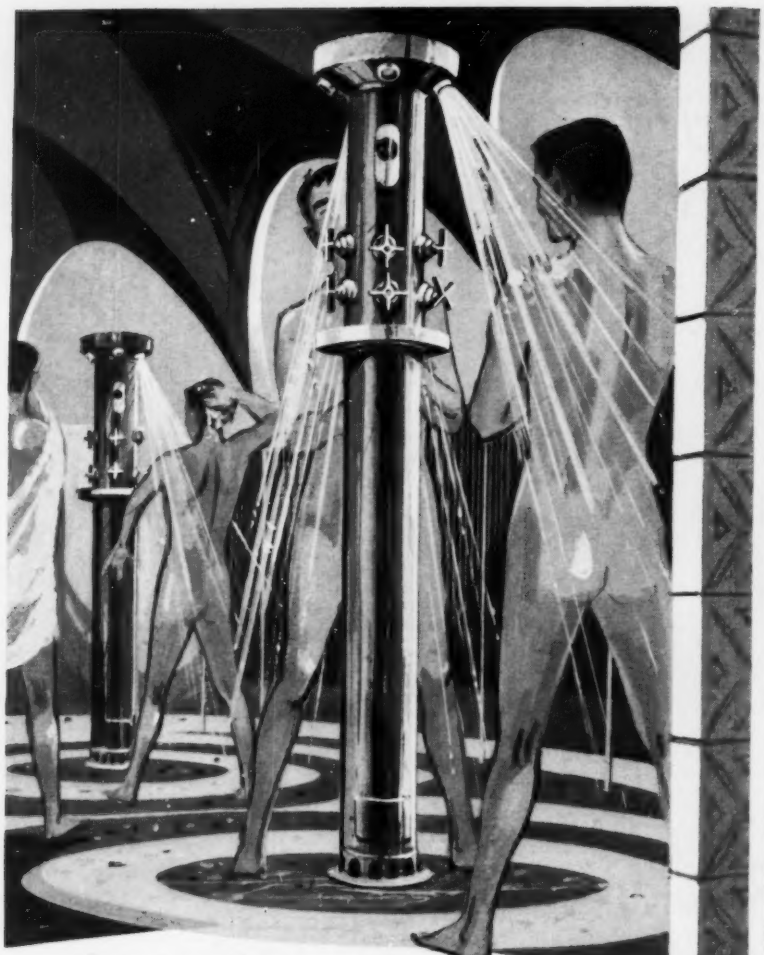
Corunna High School, Corunna, Mich., has an enrollment of 600 students. It supplements lunchroom service during the noon hour with a Vendo Automatic Milk Merchant. The one Merchant serves approximately 2,600 10-ounce cartons of milk monthly. Milk is supplied by the Borden Company of Owosso, Michigan.

As a supplement to lunchroom service, Vendo Automatic Milk Merchants reduce congestion in serving lines . . . free busy lunchroom staff for other important food services. Vendo machines refrigerate, store, serve, collect, count the sale and even make change . . . *automatically!* Ask your dairy how you can enjoy Vendo automatic milk service in your school, or write us for details.

THE Vendo COMPANY

7400 EAST 12th STREET • KANSAS CITY 26, MISSOURI
WORLD'S LARGEST MANUFACTURER OF AUTOMATIC MERCHANDISING EQUIPMENT

For additional information, use postcard facing back cover.



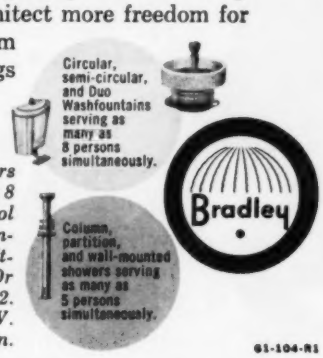
shower savings

on your school

BRADLEY COLUMN SHOWER

If you're interested in construction economies, you'll be interested in Bradley Column Showers. They serve five students at one time, yet require only *one* set of plumbing connections . . . cutting installation costs as much as 80%!

In addition, they save valuable space, conserve water, and speed traffic flow, ending irritating delays. And Bradley Column Showers allow your architect more freedom for creative planning. Remember them when you want to shower savings on *your* school.


Circular, semi-circular, and Duo Washfountains serving as many as 8 persons simultaneously.
Column, partition, and wall-mounted showers serving as many as 5 persons simultaneously.
Bradley

Bradley Washfountains and Showers provide group facilities for as many as 8 and 5 persons, respectively, in school buildings of all types. For additional information, contact your architect, consulting engineer, or plumbing contractor. Or write for illustrated catalog No. 1322. Bradley Washfountain Co., 2207 W. Michigan St., Milwaukee 1, Wisconsin.

61-104-R1

Electronic Language Classroom Travels in Trailer Van

Two mobile language laboratories, slated to visit more than 250 cities this year, are available for display at schools and colleges. Called Rolloramas, they are built into specially constructed trailer vans and contain electronic language lab-

oratory equipment with all elements found in a typical school installation, including teaching console and student booths. Demonstrations of the systems, designed to inform educational groups, including administrators, board members, faculty members and auxiliary organizations such as P.T.A. and the like, are made through the use of tapes from the various language collections. **Edwards Co., Inc., Educational Equipment Div., Norwalk, Conn.**

For more details circle #579 on mailing card.

Automatic Temperature Control on Food Conveyor

Food transported from central kitchens to serving areas is kept at the proper temperature in the new Atlas Model HP-1 Food Conveyors with automatic temperature control. The conveyor has a capacity of 70 quarts, using varying sizes of pans, and provides a reserve supply of hot foods close to serving counters immediately ready to serve. **Atlas Div., National Cornice Works, 1323 Channing St., Los Angeles 21, Calif.**

For more details circle #580 on mailing card.

Bulk Silver Caddy for Storage and Dispensing

The new T-305 Bulk Silver Caddy can be loaded with 120 dozen pieces in the

dishwashing room and wheeled directly to storage, or to the dining or lunchroom area, without rehandling. Eight deep silverware compartments provide for proper separation and can be removed for cleaning. The unit can also be used as a cutlery station at the head of the cafeteria line. **Caddy Corp. of America, Secaucus, N.J.**

For more details circle #581 on mailing card.

(Continued on page 196)

American Desk...design rated straight "A"!

VIEW the complete American Desk line at your A.A.S.A. Convention

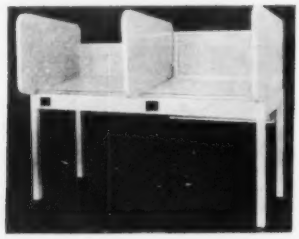
QUADRALINE
by American Desk

Style conscious . . . and built to last! The neat lines of *square* tubing in rugged, integral units with outstanding grouping possibilities. More leg freedom. Easy maintenance. Large work areas. Fibre-glass seats and backs available.

illustrated front-to-back: *Series 900 Combo Chair and Desk; Series 600 Chair Desk; Series 700 Tablet Arm Chair; Series 700-P Pedestal Tablet Arm Chair.*

AMERICAN DESK MANUFACTURING CO., TEMPLE, TEXAS

All-Metal Student Booth Is Functional, Durable Unit



Durability and maximum student privacy are provided with a functional all-metal student booth for use with or without tape recorders in language laboratory classrooms. The booth surrounds the student with high efficiency sound absorbing panels of two-inch thick fiberglass and perforated steel construction, has a Formica working surface, and may be furnished with an optional convertible top that gives added protection to recorders if installed in the booths. **Rheem Califone Corp., 1020 N. La Brea Ave., Hollywood 38, Calif.**

For more details circle #582 on mailing card.

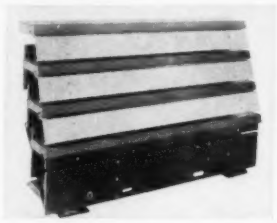
"Tuffy" Hard Plastic Ball For 16-Inch DeLuxe Globes

The "Tuffy" hard plastic globe ball is now used for the 16-inch Cram DeLuxe Hand-made Globe as well as for the 12-inch model. In a specially designed testing machine, the lightweight, durable globe ball was dropped from a height approximating that of a desk 5000 times with no physical damage to ball or map. **George F. Cram Co., 740 E. Washington, Indianapolis 7, Ind.**

For more details circle #583 on mailing card.

Vinyl-Coated Steel Forms Folding Gym Seating

The inherent durability and strength of steel, plus the color and texture of vinyl-coating, are combined in the new Brunswick V.O.S. folding gymnasium seating. The vinyl coating also deadens noise and gives the appearance of leather through



use of color tones of brown. The seating is scratch, abrasion, stain and burn resistant and can be easily cleaned with ordinary detergents. V.O.S. is constructed of heavy gauge steel for single row operation, permitting any number of rows to be used to meet varying requirements. Each row locks securely into place. A safety slope front and movable skirtboard angles protect athletes and improve comfort of spectators. **Brunswick Corp., School Equipment Div., 2605 E. Kilgore Rd., Kalamazoo, Mich.**

For more details circle #584 on mailing card.

Big Mac Bus Washer Is Fast, Economical and Portable

Just three minutes, about seven gallons of water and a few pennies of cost are required to wash a bus with the Big Mac Bus Washer. It rolls on full swivel wheels and is easily moved by one person around the bus. The two-section rotary hemp

brush is adaptable to bus contours and the washer is nine feet high. For special contours, the brush is available in three sections. The Big Mac is mounted on sealed roller bearings driven by a one h.p. sealed motor. Two water sprays mounted on each side of the brush supply the clean water, and dirty water is sloughed off. The automatic electric cable rewind eliminates excess cable on the floor. **Big Mac Bus Washer, 721 Westinghouse Ave., Johnstown, Pa.**

For more details circle #585 on mailing card.

(Continued on page 198)

DEFINITION: Modern, handsome, protective, serviceable, economical.

GAYLORD Dictionary Stands

Model No. 345* Sitting Height

In "Sit-down" and Standing Heights

Model No. 448* — Standing Height

The last word — and first choice — in dictionary stands for the modern library and school is *Gaylord*. Here's the proof, in two handsome new models designed to hold and protect the large, unabridged dictionary.

Each Gaylord stand holds dictionary at convenient 17° angle for reading, and the standing model serves extra duty as a lectern. Sliding shelf that extends 12" left or right provides handy writing surface. Extra shelf, 3" below for Atlas or other reference works.

Built for long, economical service, with all steel shelves and uprights . . . in hard, smooth baked enamel Desert Sand finish.

*No. 345 (Sitting Height) — 34" high at back, 26" long, 16" deep; four, 3" ball-bearing, swivel casters. *No. 448 (Standing Height) — Same as above except for 44" height; 4 adjustable feet for firm stand.

● *For complete information and price list, write today*

LIBRARY SUPPLIES **Gaylord Bros., Inc.**

SYRACUSE, N. Y.
STOCKTON, CALIF.

11:00 A. M.

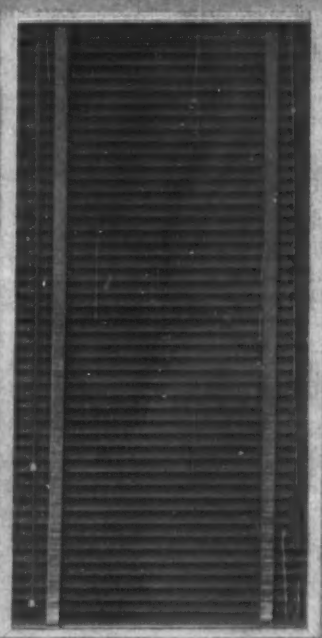
This movie is really sharp! Not a light leak anywhere.

REASON: The windows in this room are light-controlled with Flexalum Audio-Visual Blinds. These blinds make any room theatre-dark anytime. Here's why: (1) more slats per height plus (2) patented notch in each slat that permits adjacent slats to touch, equals (3) no between-slat light leaks. (4) Light-trap channels eliminate around-the-edge light leaks.

11:10 A. M.

The slides look great. Just enough light to take notes.

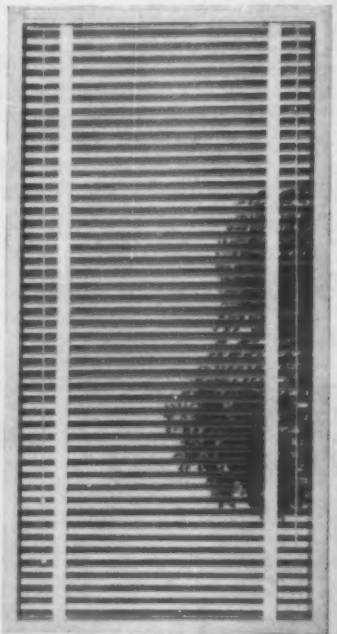
REASON: You get just the degree of light control you need with Flexalum Audio-Visual Blinds. No other form of blackout covering allows you this flexibility. And Flexalum Audio-Visual Blinds will always stop and stay just where you want them. They're precision engineered to operate so flawlessly, *they're guaranteed in writing for five full years.*



11:20 A. M.

Back to groupwork. Full daylight, instantly—no glare.

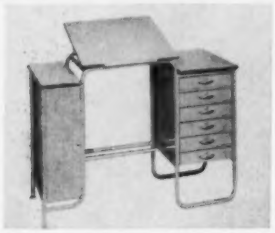
REASON: Nothing to take down, nothing to tug back. No wasted money for multiple coverings, no wasted classroom minutes. Flexalum Audio-Visual Blinds do the *whole* job — taking you from projection darkness to full light (or anything in between) with just a flick of a nylon cord. The plastic lined side channels eliminate all noisy flutter!



Get full-range light control—at low cost—with *Flexalum*® Audio-Visual Blinds!

Bridgeport Brass Co., Hunter Douglas Division, 30 Grand St., Bridgeport 2, Conn.

Model 520 Drawing Table Has Front Board Storage



Featuring storage for six drawing boards at the front of the table, the new Model AC-520 Drawing Table occupies minimum space to permit the use of the maximum number of tables in small classrooms. The six drawers are keyed differently to allow each student to lock up his supplies, with a master key for the instructor. A new adjustment simplifies raising and lowering of drawing boards, which are available in 24 by 24-inch and larger sizes. **Garrett Tubular Products, Inc., P.O. Box 237, Garrett, Ind.**

For more details circle #586 on mailing card.

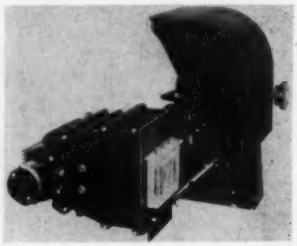
Foldoor Line Now in Peacock Fabric

A new vinyl-coated Peacock Fabric with an attractive, soft appearance is now offered in the Foldoor line of fabric-covered folding partitions. The low price range with style and durability are retained in the Peacock fabric which is available in 17 decorator colors. The tough vinyl surface withstands wear and abuse and the easily cleaned fabric is resistant to fire, cold, fading or discoloration. **Holcomb & Hoke Mfg. Co., Inc., Dept. 1235, 1545 Van Buren St., Indianapolis 7, Ind.**

For more details circle #587 on mailing card.

Act-O-Matic Science Projector Operates in Two Positions

The Act-O-Matic, a multi-purpose science projector that operates in both a horizontal and a vertical position, is available



with a unique writing attachment which allows the instructor to project class notes, diagrams and the like as they are written. In the vertical position, actual test tubes, electrolysis cells, meters, electroscopes and other science apparatus can be projected live on the screen in full color and motion as demonstrations are performed. When converted to its horizontal position, the unit becomes a standard overhead projector capable of projecting five by five-inch transparencies. **Laboratory Furniture Co., Inc., Old Country Rd., Mineola, L.I., N.Y.**

For more details circle #588 on mailing card.

Sun Louvers for New or Existing Buildings

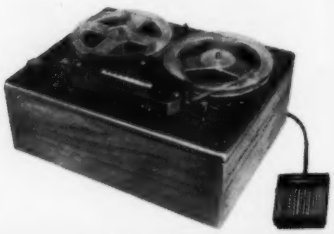
Attractive appearance with protection from the glare of the sun and from storms is provided in Lumishade Fixed Sun Louvers. They may be used as separate units or continuous runs for installation in new or existing buildings. Vertical awnings can be suspended from roof overhangs, canopies, balconies and the like. Flush mounted louvers are installed with-

in window openings and may be vertical or horizontal, with openings placed to protect against glare and brightness. Sun Louvers are of die-formed aluminum, caustic etched and alumilited, with Structural Framing Bars of extruded aluminum tubing with ferrous fasteners triple cadmium plated. Provision for expansion is provided at louver joints. Installation costs are low and the diffused light provides comfort for teachers and pupils. **Mapes Industries, Inc., P.O. Box 2067, Lincoln, Neb.**

For more details circle #589 on mailing card.

(Continued on page 200)

Tandberg SERIES 6



4 SPEED

3 TRACK

STEREO TAPE DECK

ideally suited as a **master console**

for **language laboratories** and as an **electronic teaching aid**

Featuring these facilities:

- **SOUND-ON-SOUND** . . . student may record on lower track while upper track plays back teacher's instructions.
- **ADD-A-TRACK** . . . 4 track stereo and monaural record facilities permit recording to be added to permanent tape.
- **PLAYBACK** . . . plays back 4 track and 2 track stereo and monaural tapes.
- **DIRECT MONITOR** . . . permits active monitoring of all material either from source of signal or actual recorded tape.
- **THREE SPEEDS** . . . 7½ ips, 3¾ ips and 1⅞ ips—permits up to 18 hours of recording on a single 7" l.p. tape.
- **PUSH BUTTON OPERATION** . . . permits easy handling with a silent pause, stop-start feature eliminating operational sounds.
- **3 SEPARATE HEADS** . . . uniquely designed, one each for record, playback and erase; gapped precisely for optimum performance.
- **REMOTE CONTROL** . . . built-in to the precision designed circuit; foot pedal switch is optional at nominal cost.

$498.00

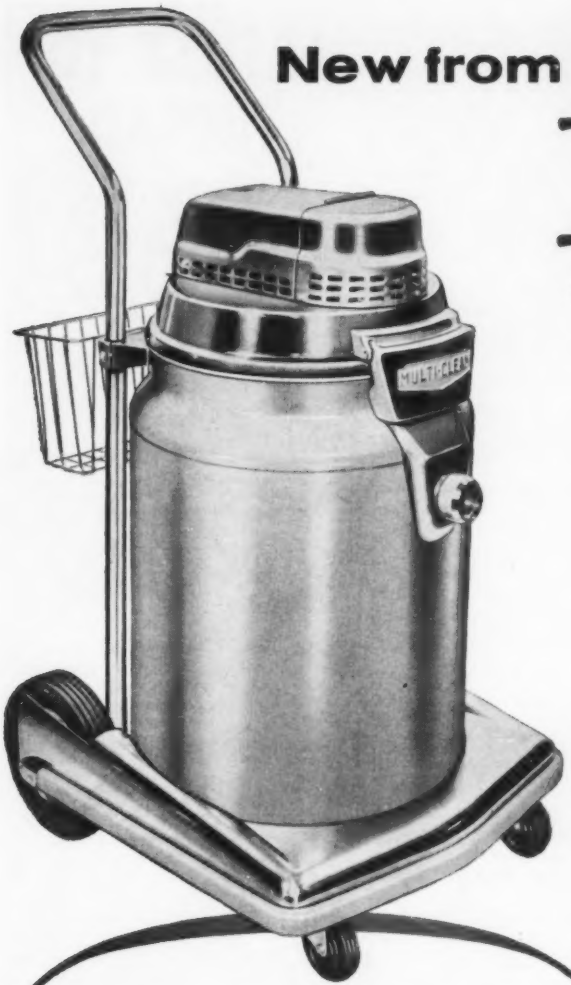
SEE YOUR AUTHORIZED TANDBERG DEALER OR WRITE FOR FURTHER DETAILS

Tandberg of America, Inc. 8 Third Avenue, Pelham, N. Y.

New from MULTI-CLEAN . . . the

Imperial

VACUUM CLEANER



3 Series; 10 Models

The new Multi-Clean IMPERIAL line of Vacuum Cleaners consists of 3 series: the IMPERIAL "5" (½ hp), IMPERIAL "10" (1 hp), and IMPERIAL "15" (1½ hp). Each of these power units may be used with 7, 12, and 17-gallon tanks and with a Kon-Vert-O-Vac attachment on a 55 gallon drum; thus power and tank capacities can be tailored to your needs.

MULTI-CLEAN®
Method

It's Powerful! To create the powerful suction needed for *complete pickup*, the heavy-duty turbines of the new Multi-Clean IMPERIAL pull in air at rates up to 216 miles per hour.

By moving *more cubic feet per minute* . . . and *at greater* speeds, more suction is naturally obtained.

It's Rugged! Despite their handsome, elegant styling, the Multi-Clean IMPERIALS have the heavy duty construction needed to make them real work horses. Motors, too, last longer.

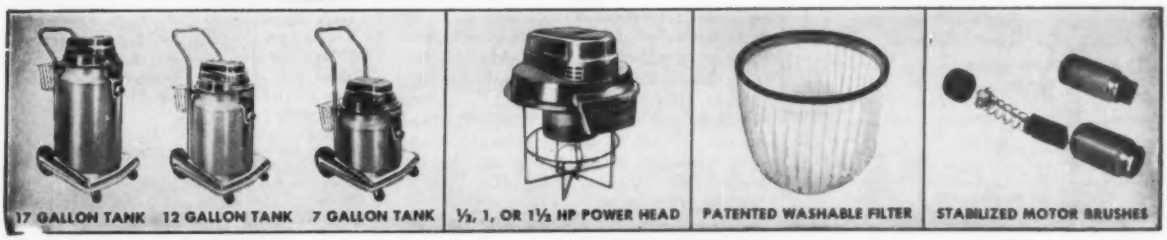
This is because power for the IMPERIAL "10" and "15" Series Vacs comes from special heavy-duty motor units designed and built by Multi-Clean exclusively for this purpose. They turn at 12,000 rpm with no load and 9,550 rpm with full load. This is *much slower* than the speed at which most other vacuum motors must operate in order to create the same suction. This slower speed means less wear, longer life.

It's Easier to Operate! The IMPERIAL is designed with the user's convenience in mind.

The tank, for example, has a non-clogging gravity drain. It can be emptied of liquids without disturbing the head. Large gray wheels make it easier to move up and down stairs or from building to building. In addition to the wheels, it also has two ball bearing gray swivel casters. This makes it virtually tip-proof by providing support at 4 points instead of the usual 3 . . . an important factor when we realize a 17-gallon Vacuum Cleaner weighs about 300 lbs. when full!

More Features! Patented, washable filter is pleated to provide 1400 sq. in. of filter area. It's made from a special quick-drying synthetic fibre that won't rot or mildew. Can be washed, rinsed, and drip-dried in minutes . . . 30-foot, 3-conductor cable has same twist lock connector as most Multi-Clean Floor Machines. If you wish, same cable can be used for both . . . Stabilized motor brushes (an exclusive, patented Multi-Clean feature) outlast standard brushes 2 to 1.

You'll want to learn more about these exciting new Vacuum Cleaners. Call your Multi-Clean Distributor *today* . . . or write to Multi-Clean Products, Inc., Dept. NS-71-21 St. Paul, Minn.



For additional information, use postcard facing back cover.

EVEN IN CLASSROOMS SUNSHINE-BRIGHT

Your Present Projector

. . . shows clear, brilliant motion pictures

For less than the cost of darkening a single room, the Wilson Movie-Mover "RP" brings motion-picture education to every room in a building, wing, or floor! Solves teaching problems, frees needed funds for purchase of materials and equipment.

Demonstrated in your own school without obligation. Just send in the coupon.

For every projector table need, see the Wilson line first. Full line of quality tables, competitively priced, with exclusive safety features, including the only table built for safe operation of RCA, Eastman, and Ampro projectors. Specially-built tables for your ETV needs, too.

H. WILSON CORP
106 Wilson St.
Park Forest, Ill.

Please send full information, including name of my nearest dealer on:

- ☐ Movie-Mover "RP"
- ☐ Movie-Mover Tables
- ☐ Special ETV Tables

Name_____

School_____

Address_____

City & State_____

Delta 17-Inch Drill Press Features Internal Depth Stop

A new line of 17-inch drill presses available in a variety of models suitable for both wood and metalworking features improved precision and operating safety. The drill press is equipped with an internal depth stop machanism that provides positive control of pinion shaft rotation and eliminates quill deflection at the bottom of the stroke. A massive head for greater rigidity, pivot-type motor mounting plate and belt guard that swings completely out of the way during speed changes are additional features. **Rockwell Mfg. Co., Delta Power Tool Div., 400 N. Lexington Ave., Pittsburgh 8, Pa.**

For more details circle #590 on mailing card.

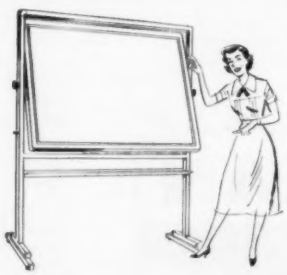
Pencil Sharpener Kit Mounts Without Holes

Permanent mounting of Boston Pencil Sharpeners is quickly effected with a new kit recently introduced. It is easy to use and permits the sharpener to be mounted on cinder block, wood, metal or glass without drilling holes. **C. Howard Hunt Pen Co., Camden 1, N.J.**

For more details circle #591 on mailing card.

Lightweight Portable Chalkboards In Revolving or Rigid Models

Maximum strength and durability are combined with lightweight construction in the new Barricks series of portable chalkboards and bulletin boards featuring

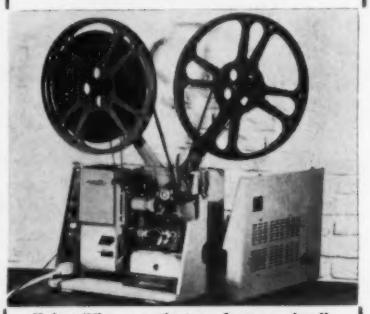


1¼ inch square tubular steel frames and standards. The series is made in both revolving and rigid models, the revolving type available with chalkboard on both sides or chalkboard on one side and bulletin board on the other, and the rigid models offered with chalkboard, bulletin board or peg board on one side only. All boards are set in heavy extruded aluminum channels inserted into the tubular steel frames. **Barricks Mfg. Co., 134 W. 54th St., Chicago 9.**

For more details circle #592 on mailing card.

(Continued on page 202)

EASIEST TO THREAD

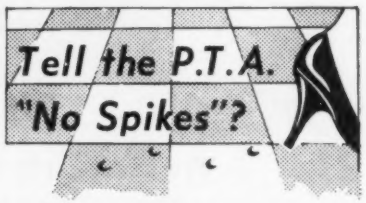


Kalart/Victor projectors feature simplified three-step threading, made even easier by a color-coded threading path.

KALART VICTOR

***FREE* — Treasure Chest of Audio-Visual Ideas. Illustrated booklet tells how to use films effectively. For your copy, circle No. 821 on mailing card included in this issue.**

Victor Animatograph Corp., Div. of Kalart
Plainville, Connecticut



Tell your most vocal taxpayers that thin-skinned floor covering which you yielded to for "economy" in that multi-purpose gym-auditorium won't take the 1 ton per sq. in. they put on their tiny heels? . . .

YOU WON'T NEED TO with

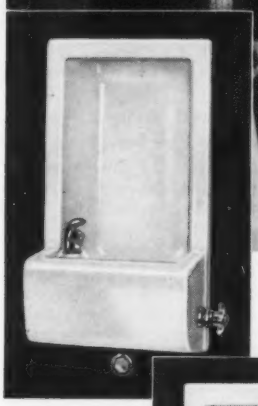
J. W. WELLS DIAMOND HARD

NORTHERN MAPLE FLOORING

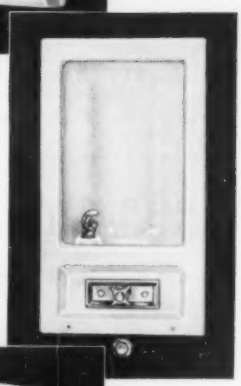
Most dent-defying floor that grows, J. W. Wells DIAMOND HARD Northern Maple is also most *resilient*. Tell those taxpayers in advance and save yourself the squawks about kids with sore ankles from unyielding concrete floors that synthetics only gloss over.

***WRITE* —**

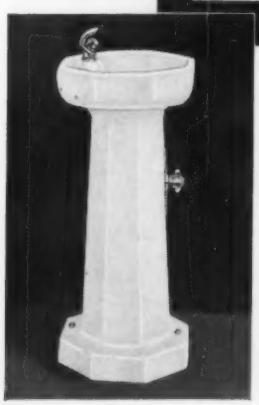
J. W. WELLS LUMBER COMPANY
Menominee 4, Michigan



Glenbrook, semi-recessed K-5293-A



Brook, recessed, K-5303-A



Carisbrook, K-5372-A

KOHLER
Drinking Fountains

KOHLER QUALITY drinking fountains meet the challenge of continuous school use with minimum maintenance.

Kohler designs — clean-looking, contemporary — insure convenient operation with hygienic protection.

The chromium plated All-Brass bubbler, above the fountain rim to eliminate back siphonage, has a special guard to protect against germ-spreading mouth contact.

The bubbler is tamper-proof — attempts to squirt water merely divert the stream through a lower opening.

Self-closing valve is adjustable for continuous flow. Automatic volume regulator keeps flow uniform under varying pressures.

Kohler fountains conform to health regulations of *all* states. Available in white and Kohler colors. All-Brass Fittings minimize wear and corrosion.

Kohler Co. *Established 1873* Kohler, Wis.

Millbrook, K-5264-A

Saybrook, K-5260-A

Highbrook, K-5268-A with push-button glass filler.

KOHLER OF KOHLER

ENAMELED IRON AND VITREOUS CHINA PLUMBING FIXTURES • ALL BRASS FITTINGS
ELECTRIC PLANTS • AIR-COOLED ENGINES • PRECISION CONTROLS

For additional information, use postcard facing back cover.

No dirty wheels or knobs or tools to handle. Just lift the seat to the desired height. The Ajustrite patented adjusting mechanism is the reason hundreds of thousands of Ajustrite Chairs and Stools are in service today. It's the oldest, the simplest, the fastest. And the most trouble-free—*that's why we guarantee it for 10 years!*

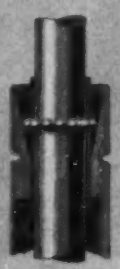
30-DAY FREE TRIAL No obligation. Prove to yourself the Ajustrite advantages in utility, comfort and economy.

32 Models for Factories • Schools • Laboratories • Hospitals • Offices

Laboratory RPC-2230

Classroom CPC-1520

Vocational Shop S-1827


Pat. Nos. 2364191-2710048
Other Patents Pending

This is the famous Ajustrite adjustment mechanism

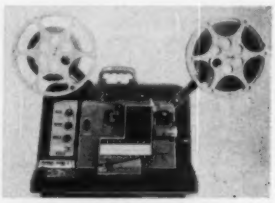
It works on the same principle as the bicycle coaster brake. When pressure is applied it grips. The thirteen balls in the wedge grip the steel rod which passes through the center. From its lowest position the seat is raised to the height desired. To lower seat, first raise to extreme height, where it automatically releases. Then lower all the way down to re-engage locking mechanism.

AJUSTRITE CHAIRS ... STOOLS

AJUSTO EQUIPMENT COMPANY
Bowling Green, Ohio

Low-Voltage Projection Lamp Gives High Screen Brilliance

A newly developed high efficiency, low voltage 250-watt lamp in the Galaxy 16mm Sound Projector uses a "dichroic" reflector for screen brilliance comparable to a 1200-watt lamp using the condenser-reflector system. Maintenance is simplified and economy of operation improved with



the lamp, which generates less heat, uses a small, quiet cooling system and has long life. The Galaxy projector has high fidelity sound through its printed circuit, advanced transistor photo-cell, built-in amplifier and acoustically engineered speakers built into the cover. Simplified threading and pushbutton control make it easy to handle by pupils as well as teachers. **Graflex, Inc., 3750 Monroe Ave., Rochester 3, N.Y.**

For more details circle #593 on mailing card.

Fiberglass-Reinforced Skylight Provides Maximum Fire Safety

A new fire-retardant translucent plastic skylight is designed to provide maximum safety in fire-hazardous areas. The fiberglass-reinforced product is made possible by a molding technic using an inherently fire-retardant, self-extinguishing polyester resin and its weatherability is increased by a coating of an acrylic lacquer. Available in single and double domes in pale green or mist white, the shatter-and-crackproof unit will not support combustion, and when ignited by direct application of flame it will extinguish itself once the source is removed. **Consolidated General Products, Inc., P. O. Box 7425, Houston 8, Texas.**

For more details circle #594 on mailing card.

Compact Three-Speed Recorder Weighs Only Thirteen Pounds

A new three-speed, high fidelity, long-playing recorder that weighs only 13

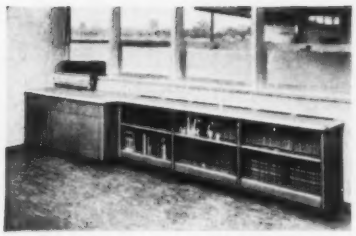
pounds, Model G-258/A will record for ten hours on one five-inch reel. The unit also features a "tape saver" mechanism which makes it impossible to snap a tape, and an "auto-load" reel. Housed in an attractive two-tone high impact polystyrene cabinet, the machine uses standard ¼ inch magnetic recording tape and is available with a complete line of accessories. **American Geloso Electronics, Inc, 251 Park Ave. S., New York 10.**

For more details circle #595 on mailing card.

(Continued on page 206)

here's why so many schools are heating with Norman Schoolroom Systems

- **Room-by-room gas heating units, to meet individual classroom needs.**
- **Fresh air circulation, with only outside air used for combustion.**
- **Unusual economy of installation, operation and maintenance.**



Teachers and department heads have complete control of the temperature and ventilation in their areas when you heat your school the Norman way. Individual gas-fired units heat and ventilate . . . automatically . . . and independently of any central system.

Fresh, circulated air—for comfort and health—is one of the big advantages of NORMAN SCHOOLROOM SYSTEMS. Only outside air enters the combustion chambers. Forced air distribution directs the heat at proper angles for classroom comfort.

NORMAN SCHOOLROOM SYSTEMS, partially pre-assembled, are installed quickly and economically. Individual units eliminate the need to heat entire school when only a few rooms are in use. And with thrifty gas, operation costs are low.

Complete information about Norman Products for school comfort is yours for the asking. Write to NORMAN PRODUCTS CO., 1150 Chesapeake Ave., Columbus 12, Ohio.

AMERICAN GAS ASSOCIATION

FOR HEATING GAS IS GOOD BUSINESS!

Rauland

SCHOOL SOUND SYSTEMS

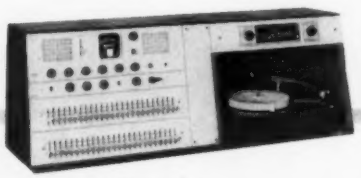
RAULAND'S engineering experience provides in these systems absolute simplicity of operation, but with the complete flexibility demanded by present day school administration. Exclusive features and moderate cost have made RAULAND Sound the choice of thousands of educators. RAULAND systems are still giving reliable service after two decades of use.

S800 Series
Three-Channel System; unusual program flexibility; capacity up to 221 rooms.

every desirable program facility and feature

- ★ **Microphones**—announcements and programs from multiple microphone locations
- ★ **Intercom**—two-way voice conversation with any room; privacy available
- ★ **Phonograph**—distributes phono program (transcription player or changer); also available for use with tape recorder
- ★ **FM-AM Radio**—selects any FM-AM radio program for distribution to any or all rooms
- ★ Optional Features—Disaster Emergency Switch; program clock signals; telephone intercom; light annunciation; remote controls, etc.

Model S745
Two-Channel System; Desk mounting—compact and efficient



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GOUGLER

MASTER KEY COMBINATION LOCKS

These sturdy, high security locks use a new type master key, not duplicable on key machines, for proper control and maximum protection. They feature "clicking" combinations, no need to read, just count clicks and open—even in the dark.

Type No. 40

Similar non-master key lock, No. 30/1, available.

BUY NOW! TAKE TWO YEARS TO PAY! Ordering now will help us deliver on schedule. Our credit plan, with no interest charged, will help you build locker fund and assure proper school security.

Write for sample, prices and 2 years credit plan.

C. L. GOUGLER KEYLESS LOCK CO.
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GRAVELY Versatility *KEEPS* Power on the job— *All Year Long!*

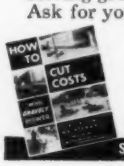
Cut expensive idle time

GRAVELY Doesn't Loaf—*GRAVELY* Works!

When you hire a man for a full-time job, you expect full time work. So why buy one-job equipment that loafs until its specialty is called for?

ONE 6.6 hp. Gravely Tractor powers 30 tools!
Choose the tools to fit your jobs—any season. From mowing to snow removal, the Gravely Tractor keeps busy saving time, saving money, year after year.

GET THE FACTS—SEE THE PROOF! See Gravely actually solving grounds maintenance problems, saving money. Ask for your FREE copy of "How To Cut Costs for Grounds Maintenance." Or better still, request a FREE demonstration. *Write Now!*



GRAVELY TRACTORS

P. O. Box 657-B Dunbar, W. Va.

SOLD & SERVICED BY AUTHORIZED GRAVELY DEALERS

McKinley School, Allentown, Pa. Built in 1886. Remodeled 1951. Original Pennsylvania Slate Chalkboards still in use.

Pennsylvania Slate . . . less expensive . . .

because it is practically everlasting!

Pennsylvania Slate is a true slate. It is slate clear through! That's why it shrugs off the decades and remains smooth and unfaded, year after year after year. Many Pennsylvania Slate chalkboards now in service in new and remodeled schools were originally installed in older buildings, 25, 50 even 75 years ago.

The lasting dark color of Pennsylvania Slate is kind to young eyes. It retains its high contrast; chalk marks stand out clear and sharp, preventing eye strain.

Write for a copy of SLATE vs. "SLATE", a compendium of comparative physical and chemical tests on true Pennsylvania Slate and imported "slate," conducted at an Experiment Station of a leading Eastern University.

**True Slate (Pennsylvania)*

**Limestone with Slaty Cleavage (Imported)*

**The two photos at right show the results of a comparative aging test, one of the many conducted at the Mineral Industries Experiment Station, Pennsylvania State University.*

NATURAL SLATE BLACKBOARD CO.
THE STRUCTURAL SLATE CO.
Pen Argyl, Pennsylvania

true slate . . . 500 million years in the making

For additional information, use postcard facing back cover.

Remote Control of Projector With Viewlex Strip-O-Matic

Problems of classroom control and attention during filmstrip projection are lessened with the Strip-O-Matic, which enables the teacher to advance filmstrip frames from anywhere in the room. The new accessory lets him move freely to direct attention, control individuals or move up to the screen to point out specific details. Frames are changed by the touch of a button on a control handle held lightly in the palm, and the Strip-O-Matic also features a built-in, automatic film take-up. **Viewlex, Inc., 35-01 Queens Blvd., Long Island City 1, N.Y.**

For more details circle #596 on mailing card.

Rite-Hold Ball Point Pens Now Refillable

The Palmer Method Rite-Hold Ball Point Pen with finger-fitting double indentations above the point, promoting correct thumb and finger positions and enabling the teacher to demonstrate their exact placement on the pen, is now offered in a refillable model. The precision ball point provides an instant, smooth ink flow and does not smear, leak or break. Refills in medium or fine point are supplied in dozen lots. **A. N. Palmer Co., 902 S. Wabash Ave., Chicago 5.**

For more details circle #597 on mailing card.

Coordinator Business Desk Permits Variety of Instruction

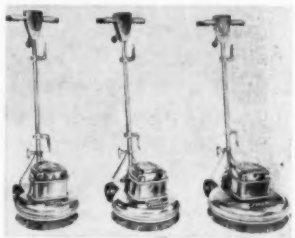
Developed to duplicate actual office working conditions and allow a wide variety of training to cover the many phases of modern business education in-

struction, the new Coordinator desk permits either left or right hand assembly for maximum flexibility in utilization of floor area. It has an all-steel supporting base with leg and rail designed for positive rigidity. The bi-level top permits adjustment to proper working heights for either typing or clerical operations. Edges and corners are rounded and the high pressure plastic laminate top protects against damage. **Toledo Metal Furniture Co., 2000 Hastings St., Toledo 7, Ohio.**

For more details circle #598 on mailing card.

Versatile Floor Machine in Three Sizes

Super DeLuxe 60 Medallion Series floor machines are available in 15, 17 and 20-inch sizes. The completely new machines feature a Step-Down Wheel Carriage Control which lowers the five-inch wheels by simply stepping on a pedal at the rear. The machines roll on the wheels in up or down position, and the toe-operated trigger retracts wheels instantly without stooping. The Dual Safety Control Switch



operates with either hand, and the specially designed capacitor-type G.E. motor, with quiet operation and minimum height, is lubricated for life. The Medallion machines are designed for dry-scrubbing, polishing, steel wooling, waxing, sanding and buffing, and are converted to efficient wet-scrubbers for all types of floors with a simple tank attachment. **United Floor Machine Co., Inc., 7715 South Chicago Ave., Chicago 19.**

For more details circle #599 on mailing card.

(Continued on page 208)

HERRICK STAINLESS STEEL REFRIGERATORS, FREEZERS AND WALK-IN COOLERS

Whatever your needs, HERRICK has the answer!

NEW WELDED STEEL FRAME . . . STRONGEST IN THE INDUSTRY

UNDERCOATING ON INSIDE OF CABINET SHELL, HIGHLY-EFFECTIVE VAPOR SEAL

MOST REACH-INS AVAILABLE WITH PORCELAIN ENAMEL INTERIORS

MOST MODELS AVAILABLE AS DOUBLE-FRONT PASS-THRU

MOST MODELS AVAILABLE FOR REMOTE INSTALLATION

TSS45

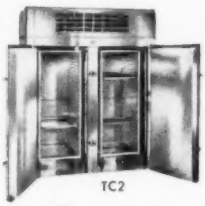
REACH-IN REFRIGERATORS AND FREEZERS

Traditional HERRICK quality . . . now with new built-in durability. Welded steel frame securely reinforced . . . will not warp. Undercoating also acts as rust inhibitor. 2, 4, 6 and 8-door models.

TSS67DT

DUAL-TEMP AND COLD-HOT REFRIGERATORS

Dual-Temp provides freezer section and normal refrigerated section. Cold-Hot provides normal refrigerated section and insulated heated section. Lifetime stainless steel. 4, 6 and 8-door models.



TC2

TRAY-CART REFRIGERATORS

Foods can be prepared where most convenient, placed on trays and wheeled into the refrigerator for chilling. Then wheeled out again when needed. 2, 3 and 4-door models. Built to accommodate standard carts (not included).

888SS

WALK-IN COOLERS

Ideal for bulk storage of foods. Available in stainless steel, as shown, steel baked enamel, or marine-type plywood. Also offered as freezers. Single or multiple compartments.

Write Dept. N for name of nearest HERRICK Supplier

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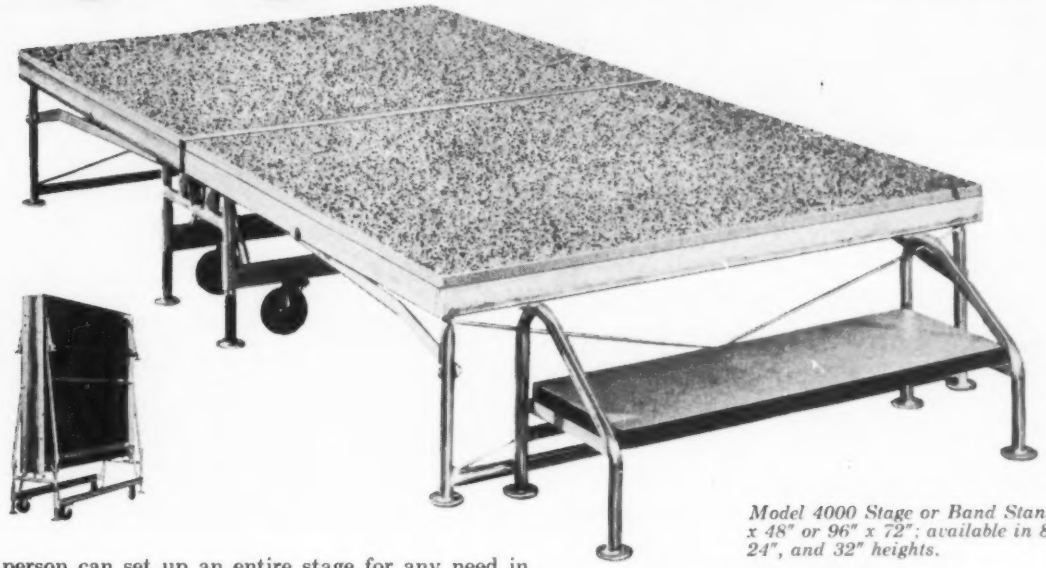
Waterloo, Iowa

versatile and portable for every staging need . . .

SICO STAGES AND RISERS



Model 4000 Stage or Band Stand—96" x 48" or 96" x 72"; available in 8", 16", 24", and 32" heights.

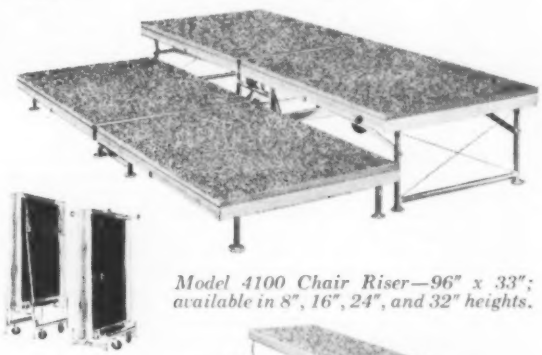
One person can set up an entire stage for any need in minutes. Three basic SICO units—Stages, Chair Risers, Choral Risers—can be used singly or in any combination for countless staging requirements. Interchangeable and interlocking, these units can be set up in straight or semi-circular arrangement. SICO staging is designed to provide schools functional, efficient service; constructed to last a lifetime.

Portable—fold them up, roll them away. Units are designed for one man handling. 4" casters lower automatically with folding, retract automatically with opening. Has exclusive SICO easy-folding action.

Decking—quiet, durable, beautiful. Vinyl asbestos tiling—retains its beauty longer than any other material. Easy-to-clean; mop it when you mop the floor. Assures quiet, sure-footed walking.

Sturdy—one-piece structural steel frame. 14 gauge structural steel, unitized (all electric arc welded) frame gives solid one-piece rigidity. Steel is zinc lustron plated—front and back are free of crossbars for easy floor cleaning without moving units.

Complete accessories available. Front and side panels for complete enclosures; interlocking triangular inserts and tapered units for semi-circular arrangements; platform steps or ramps; guard rails; chair stops.



Model 4100 Chair Riser—96" x 33"; available in 8", 16", 24", and 32" heights.

Model 4200 Choral Riser—96" long in 3-rise unit; each rise platform 18" wide; 8", 16", and 24" high.

add extra height and versatility with SICO SCAFFOLDING

SICO Scaffolds are as solid and safe as the basic staging unit. You can raise any unit to any desired height (in multiples of 8"). Quick and easy to install, SICO Scaffolds can be stored right on the folded unit, ready for use next time you need them.

Makers of fine multi-purpose room equipment

For complete information on SICO Stages, Risers, and Scaffolding, (or on the entire line of SICO school equipment), write

SICO MANUFACTURING COMPANY
5215 Eden Avenue South
Minneapolis 24, Minn., Dept. 201

How VU-GRAPH "TEACHING ASSISTANTS" Extend The Capacity Of Your Present Faculty

By Stephen D. James, M.A. English, M.A. Ed.

Beseler Vu-Graph Overhead Projectors can be valuable, time-saving "teaching assistants" that expand the teaching capacity of your present faculty. This has been convincingly demonstrated in several long-term programs which have been sponsored in the interest of improving teacher utilization and efficiency.

HOW VU-GRAPH MAKES AN EFFICIENT TEACHING "SYSTEM"

Vu-Graph has actually been made the center of a highly efficient new teaching system. It permits a single teacher to handle extremely large classes . . . even groups of classes, in "teamwork" projects. The unique flexibility of Vu-Graph makes it far more than a simple "visual aid" because it lets a teacher—project transparencies behind her from the front of a fully lighted room . . . face her class . . . write, sketch, erase or test on the projected image . . . project overlays to build a complex picture in simple steps . . . and prepare lessons in advance on cellophane or acetate rolls.

WHAT VU-GRAPH IS

Vu-Graph is an "over-the-shoulder" or overhead projection instrument which permits placement of transparent visual aids on a self-illuminated horizontal projection stage. The glass cover over the large aperture of the stage also provides a writing surface at a convenient, normal position. The projection stage holds a support post for a projection head that stands above it. The lens-mirror assembly of the head, pointed downward at the aperture, "sees" the transparent material and casts a huge, brilliant image behind the operator.

THE VALUE OF PROJECTION IN A FULLY LIGHTED ROOM

The Vu-Graph image is so brilliant and large (up to 13' x 13') that it may be seen from every corner of a room fully lighted by bright sunlight or artificial illumination. Learning value of visual aids used on Vu-Graph are greatly multiplied; students may take notes or do written exercises during projection. Class control or ventilation problems of darkened rooms are non-existent.

TEACHER FACES CLASS, SEES RESPONSE

The combination of Vu-Graph projection behind the teacher with its ability to produce a brilliant image from the front of a fully lighted room means the teacher faces her class. She observes individual expressions that tell her whether to proceed, or stop to emphasize or repeat.

TEACHER WRITES, SKETCHES, ERASES OR TESTS

A teacher may write, sketch or erase spontaneously on transparencies as she projects them, making a "live" teaching medium of Vu-Graph visual aids. Equally important, cellophane or acetate rolls make Vu-Graph an "electric blackboard" for grammar exercises, arithmetic problems, science diagrams, tests or other lesson materials. Prepared in advance or before students' eyes, they may be re-used. This saves countless hours otherwise spent erasing and rewriting on a chalkboard; writing space is never limited and material can be seen from every seat.

OVERLAYS BUILD COMPLEX CONCEPTS IN SIMPLE STEPS

Overlay transparencies on Vu-Graph start with a simple idea and add steps to complete a complex concept. An unusually concise method of teaching in any subject, it minimizes confusion and eliminates time-consuming unnecessary explanation or discussion.

VU-GRAPH TEACHING ASSISTANTS IN YOUR SCHOOL

Properly used, a single Vu-Graph shared by your present faculty—or one in each classroom—can pay rich dividends in better teaching, better learning and in more effective use of your present budget. For a copy of an informative booklet "Use Of The Vu-Graph As An Instructional Aid" and, if you wish, a free no-obligation demonstration, write to:

CHARLES BESELER COMPANY, 222 SOUTH 18TH ST., EAST ORANGE, NEW JERSEY

Colored Neoprene Balls Permit Precise Stereochemical Models

The Cenco-Petersen Molecular Model features elastic atoms permitting construction of models with or without strain distortion, true-to-scale bond lengths and angles for accurate predictions of interatomic distances and bond angle distortions, and bond linkage for either rotating or rigid

connections. A more precise picture of stereochemical relationships is possible with the new model, which consists of 59 flexible neoprene atoms and 55 rigid polystyrene monovalent atoms, plus the bonds and fittings. The elastic nature of the neoprene automatically distributes strain to all the bond angles involved, and the molded atoms represent tetracovalent carbon and other elements with multiple valences. **Central Scientific Co., 1700 Irving Park Rd., Chicago 13.**

For more details circle #600 on mailing card.

Frozen Turkey Roll for Portion Control

A new frozen turkey roll is now available for simplified handling and portion control in serving turkey. The fully cooked and quickly frozen turkey rolls, weighing nine pounds each, save time and waste in handling and permit exact cost and portion conrtol. Storage and cooking space are also reduced to a minimum. Rolls are available with all white meat, all dark meat, or a combination of 60 per cent white and 40 per cent dark meat. **Swift & Co., Union Stock Yards, Chicago 9.**

For more details circle #601 on mailing card.

Heller "Magazine Minder" Rack Has Hard Lacquer Finish

Suited for use in libraries, teachers lounges and other areas where a supply

of magazines must be kept available, the new "Magazine Minder" rack can display twenty-two or more magazines at a convenient height. The unit features a hard lacquer finished surface highly resistant to marking or scuffing, and is available in either oak or birch. **W. C. Heller & Co., Montpelier, Ohio.**

For more details circle #602 on mailing card.

(Continued on page 210)

NEW BOOKLET, BY HOLCOMB, GIVES MODERN, TIME-SAVING, MONEY-SAVING WAYS TO MAINTAIN FLOORS

Attention!
SCHOOL ADMINISTRATORS

Here's the way to reduce your ***"Floor-Care Cost Index"*** —with modern maintenance methods and modern materials described in this easy-to-follow, ***free*** floor care guide.

Here's the kind of "how-to-do-it" help you've been looking for. It's a new, down to earth floor care guide prepared by the nation's leading authority on modern maintenance methods of all kinds.

Tested and proved procedures for the proper finishing of new floors . . . for the rehabilitation of old floors . . . and for regular maintenance of all floors are outlined in detail.

This new guide is the result of Holcomb's 65 years of experience in developing scientific methods and materials to give you more beautiful, better protected, easier to maintain floors . . . *plus a new found profit in dollars through reduced work time costs.*

SEND FOR YOUR FREE COPY *using coupon below.*

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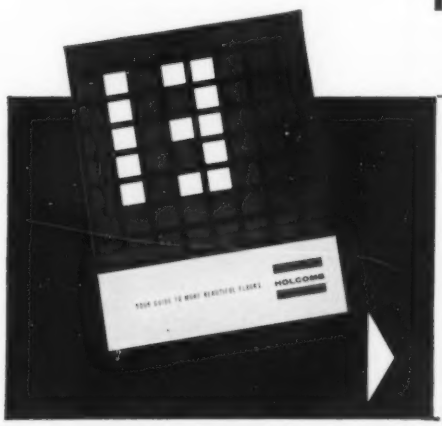
Hackensack • Dallas • Los Angeles • Toronto



J. I. HOLCOMB MFG. CO., Inc., Indianapolis 7, Indiana
Please send FREE copy, "Your Guide To More Beautiful Floors"

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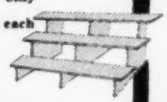
FOR STANDING or SEATED CHORUS

● STANDING

Put up to 72 Singers on only 4 units

See each member, hear each voice

Immediate delivery

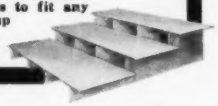


● SEATED

Complete Set accommodates Chorus of 85

Doubles for Band or Orchestra

Rearrange Sections to fit any Stage or Group



COMPLETELY PORTABLE . . . Easy to Set up — Move — Store
Designed for maximum proficiency — Greatest safety — Visible control — Your Group looks better — Sings better — Sounds better on a WENGER RISER.

All Bolted Construction

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RISERS • PORTABLE STAGES • SOUSAPHONE CHAIRS

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Splinter-proofed Edges

For dramatized teaching that sticks

THE MICROMATIC

completely automatic sound slidefilm projector.

Sound plus pictures add drama to teaching methods to provide greater student attention and retention. The MICROMATIC's fully automatic operation assures perfect synchronization of sound and picture . . . keeps student attention focused on the lesson—not the equipment. Redi-Wind film system eliminates film rewinding. Quality, inherent in all DuKane equipment assures sharp clear pictures and true sound fidelity. Enjoy the results of increased teaching effectiveness . . . add a DuKane teaching machine to your program.

For a demonstration write or wire . . .

DuKANE CORPORATION

DEPT. NS 21 • ST. CHARLES, ILLINOIS

Alphacolor Liquid Tempera in Plastic Squeeze Bottle

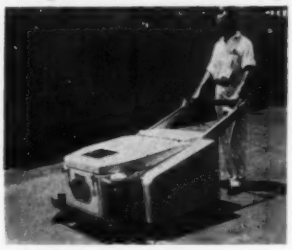
Formulated to prevent hardening or settling in the container, the new Alphacolor Liquid Tempera is unharmed by

freezing in transit or storage and is offered in 25 colors, plus five fluorescent colors. It is supplied in two or four-ounce plastic squeeze bottles with dispenser tops. **Weber Costello Co., Chicago Heights, Ill.**

For more details circle #603 on mailing card.

Improved Wayne Power Sweeper Features Larger Engine and Muffler

The improved Wayne Model 703 power sweeper sweeps more than 40,000 square feet per hour and is compact and maneuverable. A larger engine that provides longer service life and improved

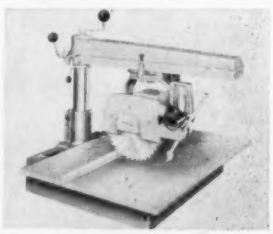


fuel economy, and a larger muffler that reduces engine sound level are two of the basic modifications of the new unit designed for multiple applications, including parking lots, garages, and schools and other public buildings. **Wayne Mfg. Co., 1201 Lexington Ave., Pomona, Calif.**

For more details circle #604 on mailing card.

Radial-Arm Power Tool Is Budget Priced

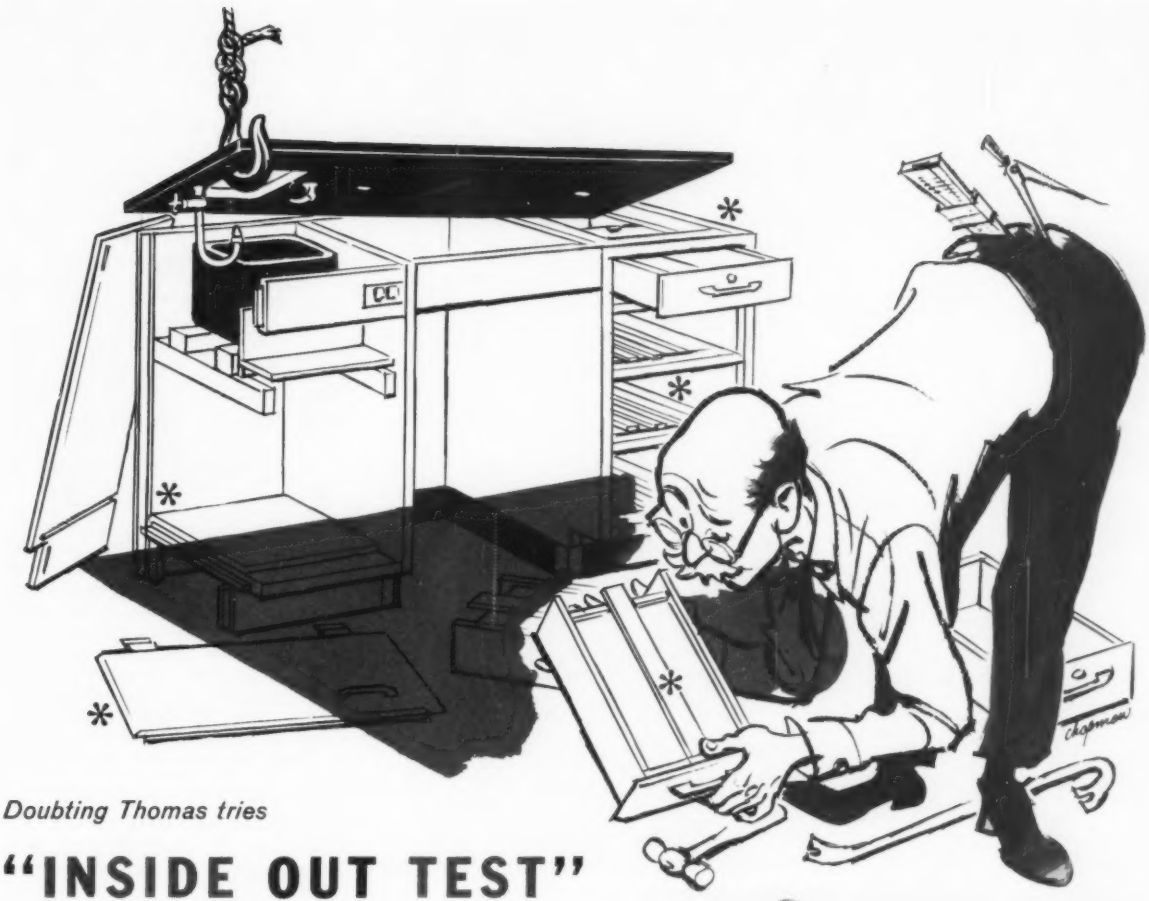
The 925-E, an economy workshop machine with the advantages of a radial-arm power tool, is designed to supplement the existing DeWalt "Power Shop" line. Special features of the new unit include



a custom built totally-enclosed motor which delivers 1.8 horsepower at the cutting spindle, a cam-type safety key switch which actuates in any direction and can be removed when the power is shut off, and a dual arbor motor shaft. **DeWalt, Inc., Lancaster, Pa.**

For more details circle #605 on mailing card.

(Continued on page 212)



Doubting Thomas tries

"INSIDE OUT TEST"

on Kewaunee Furniture . . .
substantiates reputed superior quality

The sagacious savant, conducting the infallible Kewaunee "INSIDE OUT TEST," is obviously a figment of our artist's imagination. Nevertheless, he humorously personifies thousands of scientists, chemists and doctors who have had the opportunity to work with Kewaunee scientific equipment. While only a few have first hand knowledge of the many obscure details which combine to form the finest technical furniture manufactured, the rest instinctively realize that it's the fulfillment of "their heart's desire."

When you're looking at laboratory furniture . . . look at it from the "inside out" . . . study its construction and then buy Kewaunee with assurance.

Our local representative will gladly call but, if you prefer, we'll send a complete catalogue.

See Kemtech Stock Furniture at the Educational Conventions

IN STOCK!

A large selection of furniture is constantly stocked to provide 30 day delivery.

**High productivity with modern streamlined manufacturing methods provide top quality furniture at minimum cost. Look for these important structural features when evaluating equipment.*

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Statesville, North Carolina

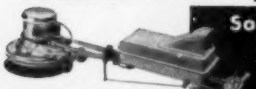
Kewaunee Manufacturing Company
Adrian, Michigan

General Sales Office
Kewaunee Technical Furniture Company
3004 W. Front St., Statesville, N. C.

For additional information, use postcard facing back cover.

Here's the new "compact", lightweight, low-priced floor maintenance machine designed, built and equipped to squarely meet modern need for both scrubbing and polishing small area floor surfaces.

This new Super Service Port-Able 13SP scrubs, cleans, polishes — does everything any big floor machine can do. It brings to small area duty the efficiency of the big machine at a fraction of big machine price. Anybody can use it — easily carried up and down stairs. It is so handy, easy to use, and economical of labor that many are replacing big machines with this compact unit for multiple small and congested large areas. Now available from your local Super distributor. See it. Try it.



- It shampoos rugs, carpets, scrubs and polishes floors
- Lightweight, practically indestructible solution tank made of high impact Royalite
- Complete 13" brush equipment with standard aluminum drive plates
- Self-lubricated—no grease leaks
- Power-Grip Nylon drive—no slipping, stretching belt drive, no metal-to-metal gears
- Fully adjustable handle provides operator comfort
- Light, easily handled and carried about
- Quiet — use it at all times of day or night

Solution will not spill from tank under any conditions of use or storage. Tank is completely non-corrosive!

WRITE FOR DETAILED AND SPECIFICATION DATA
ASK YOUR LOCAL SUPER DISTRIBUTOR.

Please send catalog and data on the new Super Service Port-Able 13SP.

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ADDRESS_____

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"Once Ever Does It"

SUPER SUCTION SERVICE®

Power Suction Cleaners • Quality Floor Machines

SINCE 1911

"THE DRAFT HORSE OF POWER CLEANING MACHINES"

THE NATIONAL SUPER SERVICE COMPANY 1956 N. 13th St., Toledo 2, Ohio

Improved Carriage Suspension on Remington Electric Typewriter

The most important single development on the new Remington Electric Typewriter is the new carriage suspension design, a totally new cushioning system that produces a light, fast and responsive touch. The typist is able to dial a precise adjustment for carbon copies with Coordinated Copy Controls, two dials that set the printwork shading and carriage posi-

tion for normal or extra-thick paper packs. A different pressure regulator for each character on the keyboard, a slide-up vertical scale that shows how many usable lines remain at the bottom of the sheet, an "erasing table," and transparent paper holders are among the many new engineering and operating features of the typewriter, available in six colors. **Remington Rand, Inc., Div. of Sperry Rand Corp., 315 Park Ave. S., New York 10.**

For more details circle #606 on mailing card.

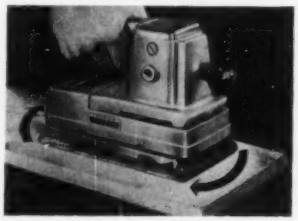
Airkem Gold Destroys "Difficult" Odors

Formulated with ingredients particularly effective against the difficult odors of cooking, paint and other heavy odors, Airkem Gold does not perfume the air, desensitize the sense of smell or leave an objectionable end odor. It adds an air freshened effect and is available in liquid or solid form. **Airkem, Inc., 241 E. 44th St., New York 17.**

For more details circle #607 on mailing card.

Heavy-Duty Electric Sander Has Orbital or Straight Line Motion

Model 692 Orbit/Line Sander, a heavy-duty electrical tool, does either orbital or straight line sanding work at the flick of



a convenient motion switch. No tools are required for changing the motion pattern or for replacing sandpaper, and a non-slip rubber belt delivers powerful strokes for both sanding actions. A dust pick up unit is optional, and consists of a hose that attaches to any vacuum cleaner for removing over 90 per cent of fine sanding dust, permitting painting and staining in the same area. **Skil Corp., 5033 Elston Ave., Chicago 30.**

For more details circle #608 on mailing card.

(Continued on page 214)

Make the Most of Valuable Teaching Time

with PROVEN

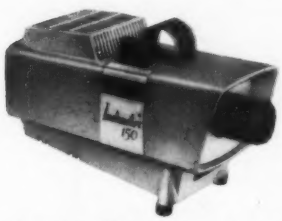
GRAFLEX® A-V EQUIPMENT

GRAFLEX SCHOOL MASTER* FILMSTRIP AND SLIDE PROJECTOR

Ideal for large audiences and small groups as well. Many advanced time-saving features make the School Master the favorite projector of teachers everywhere. Handles filmstrip or 2″ x 2″ slides with equal ease. Exclusive built-in carrying handle. Entire Condenser system removes as a unit for cleaning. Exclusive accessory rewind take-up rewinds filmstrips into storage container automatically. 500 watt and 750 watt manual or remote control models from $84.50.

School Master 750, above, is shown with exclusive accessory rewind take-up and semi-automatic slide changer.

E-Z VIEWER for convenient illuminated previewing of single frame filmstrips • 3-times enlargement • Folding stand permits 45° viewing angle • Positive advance • Easy to thread • Only 4½″ wide, 2¾″ high and 5¾″ long • Weight 24 ounces. Only $15.95.



GRAFLEX

Instructor® 150

FILMSTRIP PROJECTOR WITH EXCLUSIVE PUSH-BUTTON FILM ADVANCE ONLY $29.75

Specifically designed for smaller audiences, the Instructor 150 is particularly useful in the instruction of smaller classes, lecture and study groups. Just push a button to advance the film. Light, easy to carry . . . and costs so little! 3″ f/3.5 lens. Push-button on-off switch • Rear elevation adjustment • Built-in film take-up compartment • Complete operating instructions permanently affixed to projector.

GRAFLEX

Classic

PM TAPE RECORDER

Classic Projector Master Tape Recorder records an inaudible signal on tape for automatically advancing filmstrips in School Master and other remote control projectors. Ideal for those lessons that require both sight and sound combination for an effective classroom program.

Features push-button operation, built-in tape splicer, two speakers plus high frequency extender, carrying case, and latest safety wiring, $249.50.

Model AV-5 ($219.50) has all the above features except the automatic electronic projector control.

*Trade Mark. All prices subject to change without notice.

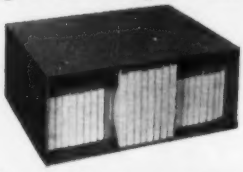
For additional information on equipment shown, write Dept. NS-21, Graflex, Inc., Rochester 3, N. Y. A subsidiary of General Precision Equipment Corporation.

GRAFLEX®

A SUBSIDIARY OF GENERAL PRECISION EQUIPMENT CORPORATION

NEW

Magnetic Tape Cabinet



5" and 7" tape compartments

Each section 19" x 7⅞" x 7⅞". May be used independently for wall mounting. Two selections may be stacked back to back with film strip and slide cabinets. Each section holds 27 5" or 7" diameter tapes. Gray hammerloid enamel finish. No. 5-7 Tape Cabinets, each sec. $13.00*

Tape and Film Cabinet

Keep your precious recorded tapes, film strips and slides in perfect condition in these specially-designed all-steel cabinets. Photo shows cabinets stacked on

handy cart. Cabinets may be used separately as desired. No. 5-7 5" Tape Cabinet—19" x 7⅞" x 7⅞" each section $13.00*

No. 10FS Film Strip—Slide Cabinet only less trays. Ship. wt. 42 lbs. $53.00*
No. 10F Tray for 90 film strips. Each $2.00*
No. 10S Tray for 280 2" x 2" slides. Each $5.00*
No. 16 Mobile Cart only. Ship. wt. 20 lbs. $28.00*
Complete 3 in 1 cabinet as illustrated $115.00*

Portable Steel Projection Stand

Four 3" casters, two with brakes. Height: 41". Stable, tapering design (19" x 31½" at bottom) 18" x 26" at top. Rail on 3 sides. With non-skid rubber shock-proof mat. All steel, with 1" tubular steel frame. Baked enamel in tan or gray.

All prices F.O.B. Minneapolis

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Smith System MANUFACTURING COMPANY
212 Ontario Street S.E., Minneapolis 13, Minn.

I am interested in your line of A-V storage equipment. Please send catalog.

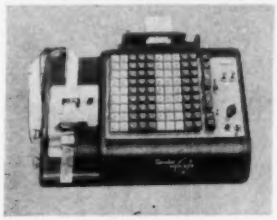
*Name*_____ *Company*_____

*Address*_____

*City*_____ *State*_____

Synchro-Monroe P-03 Is Punch Tape Adding Machine

Designed exclusively for data processing in accountancy, the new P-03 Synchro-Monroe Punch Tape Adding Machine is available in both single-register and duplex models. Compatible with data processors of all service bureaus, the P-03 uni-



versalizes source data origination in processing for accounting. The machine features automatic repetition of all code information, and the keyboard symbols provide clear-cut identification of operating controls. **Monroe Calculating Machine Co., Inc., Orange, N.J.**

For more details circle #609 on mailing card.

All-Purpose Clear Finish Introduced by Pratt and Lambert

Versatile, wear resistant and tough, Varmor is a new all-purpose clear finish which provides a satisfactory combination for outdoor and indoor application. It is a durable, tough finish for floors, walls, furniture and other surfaces. It withstands detergents, acids, alkalis, alcohol, salt water and cleaning fluids and requires no waxing. Ready to use, Varmor may be applied by brush, roller or spray on either new work or over old finishes in good condition. It gives an exceptionally clear and unclouded finish which allows the natural appearance of wood to remain unchanged, and may be used over bare wood or over conventional stains or paste wood fillers. **Pratt & Lambert-Inc., Tonawanda St., Buffalo, N.Y.**

For more details circle #610 on mailing card.

Science Kit No. 250 For Teaching Lower Grades

Materials enabling a teacher to demonstrate many basic concepts of physical

science through classroom experiments make up the new LaPine Elementary Science Kit No. 250. A bulletin and a manual are among the 47 different types of materials included in the kit which is planned for use in the lower grades, and comes complete with a wooden cabinet designed for storage of kit materials. **Arthur S. LaPine & Co., 6001 S. Knox Ave., Chicago 29.**

For more details circle #611 on mailing card.

(Continued on page 216)

Mr. Du

SAYS:
I've got the products
To clean most all,
From tableware to dining Hall
Just pick up your phone*
And make the call.
*Listed under Cleaning Compounds in the Yellow Pages.

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K-O-L Supreme

King in the Kitchen . . . one of the finest compounds for machine dishwashing operations. Prevents stain and film on tableware and glasses. K-O-L Supreme has no caustic or toxic ingredients. For all water conditions. Obtainable only through your DuBois Representative. Ask him about our other school sanitation products, too.

40 years of cleaning experience at your service.

DuBOIS CHEMICALS, INC.
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"Stationary" racks in single or double face units snap-lock rigidly together to fit any space or provide capacity required.

Checker
COAT and HAT RACKS

Style D.F. 550, Portable Checker Rack (illustrated) is 5 ft. 2 in. long; holds 40 coats and hats; goes wherever needed on large, ball-bearing-swivel casters. Comes with or without checks and snap-on numbers. Strongly welded of square tubular, heavy gauge and highly embossed furniture steel. Smart in modern baked finishes. Give lifetime service — never sag, creak or sway. 3 ft., 4 & 5 ft. units available, as well as other efficient space saving equipment for every church, school, commercial, industrial and institutional need.

Write for Bulletin CK-25

VOGEL-PETERSON CO.
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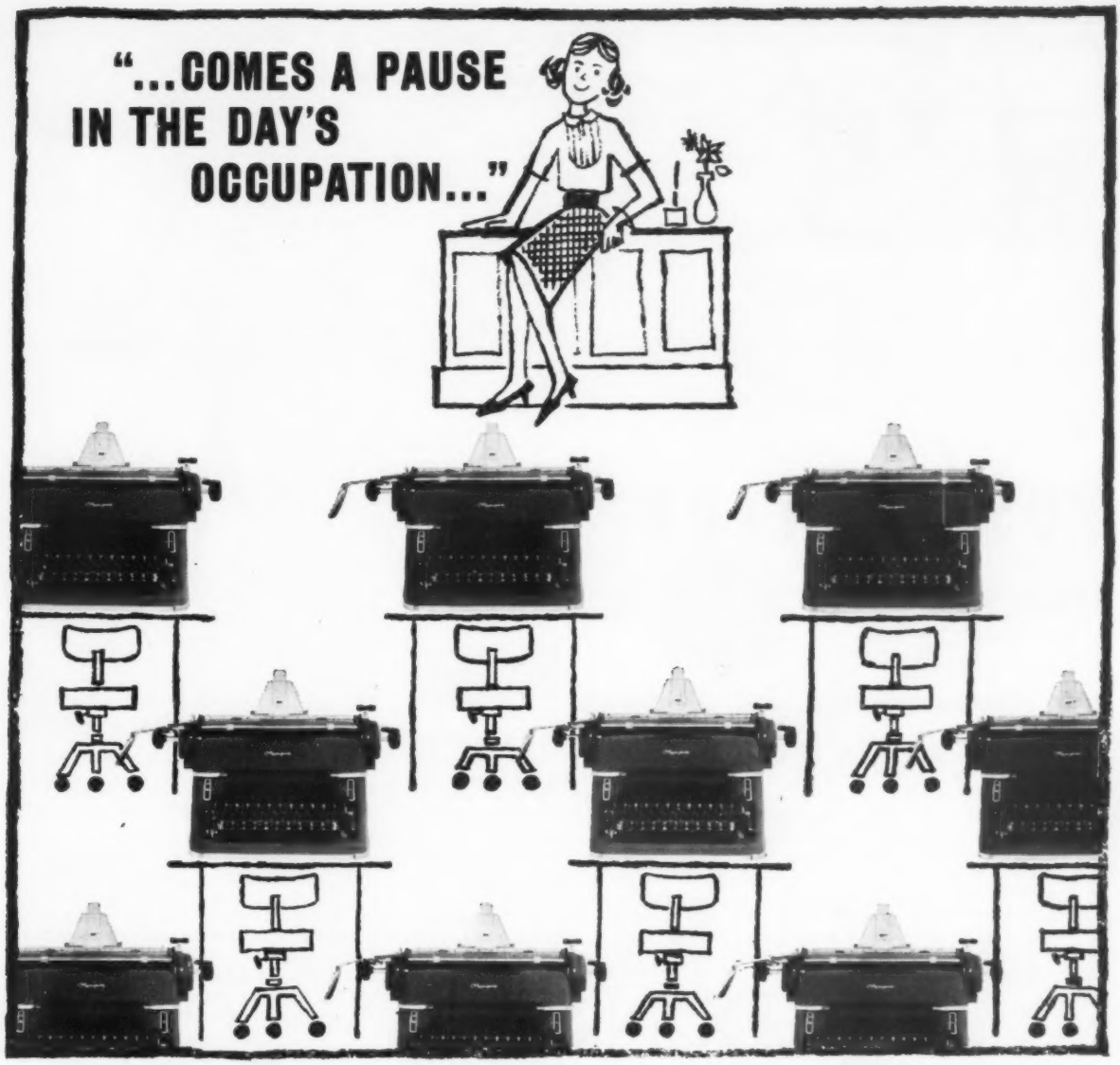

...KNOWN AS THE TEACHERS' HOUR!

A time to relax–a time to reflect! Are the fledglings progressing? How's their technique...speed–stance–stroke?

It's satisfying to be a perfectionist...and to help develop this in other minds and hands. Credit, too for the precision-built Olympia Typewriters...serving as partners in perfection.

These superb typewriters come fully-equipped with the finest, most advanced typing aids...from exclusive spring-cushioned keytops to convenient half-spacing. Features that are easier to teach with...to learn on!

Important, too, is Olympia's reputation for easy, quiet, trouble-free performance, year after year...cutting maintenance costs to an absolute minimum.

No wonder more and more schools, from coast to coast, are selecting Olympia. Why not put one to the test yourself–before you decide on any other typewriter!

Olympia

"Writes best of all–because it's built best of all!"

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A FREE COPY OF ALAN C. LLOYD'S "The Typing Teacher As A Technician"

...an informative series of articles on the development, protection, correction and refinement of basic typing skill.

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Gentlemen:

Please send me a copy of Alan C. Lloyd's articles..."The Typing Teacher As A Technician"...to the address below.

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For additional information, use postcard facing back cover.

Photometric Lighting Fixtures Truly Modular in Length

Designed for close ceiling or stem mounting in classrooms, offices, libraries,

drafting rooms, laboratories and other areas of the school, the Wakefield Photometric is an attractively styled lighting fixture of white enameled steel that has no visible fasteners, welds or knockouts. Available in four or eight-foot lengths, the Photometric has an injection molded refractor in styrene or acrylic that is easily removed without tools for relamping or cleaning. When connected in luminous rows, the truly modular units have no opaque metal between them to cause distracting contrast. **The Wakefield Co., 731 South Water St., Vermilion, Ohio.**

For more details circle #612 on mailing card.

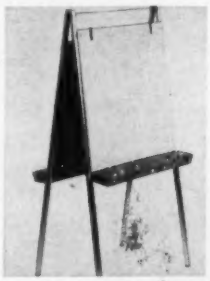
Laminating Method Offered with Thermo-Fax Machines

A new process for laminating papers, cards, charts, records, photographs and other written or printed documents with plastic film is now possible on Thermo-Fax machines. Existing copying machines made by the firm laminate without special equipment or adjustments, making it possible to protect frequently handled papers and to prevent tampering with cards or identification. The tough, transparent seal resists moisture, liquids, grease and smudges. **Minnesota Mining & Mfg. Co., Dept. SO-138, 900 Bush Ave., St. Paul 6, Minn.**

For more details circle #613 on mailing card.

Adjustable FE 2 Easel Has Plastic Surface

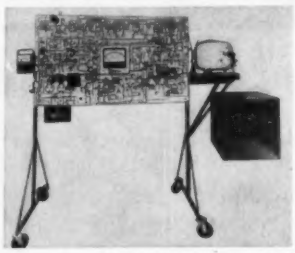
Roomy plastic paint trays which are easily removed for cleaning, and a stain resistant plastic surface simplify maintenance of the Billerett FE-2 Easel for student use and classroom demonstration. When not in use, the easel folds flat for stacking or upright storage. Its light weight makes it easy to handle and its sturdy construction ensures long use. **Billerett Co., 1544 Embassy St., Anaheim, Calif.**



For more details circle #614 on mailing card.

Electronic Dynamic Demonstrator Complete Teaching Device

A complete electronic teaching device, the Transvision "Electronic Dynamic Demonstrator," is designed for school and college classroom use in teaching the fundamentals of electronics through radio, television and radar. The low-cost device includes a teacher's manual and electronics course of study, and consists of a three by five-foot breadboard, displayed



blackboard style, that is assembled and studied circuit by circuit. When completely assembled it is an operating television receiver superimposed on a large circuit diagram. The manual, course of study and lesson material tie in with the parts and circuits being used, and fundamental principles of physics, electricity and electronics which apply are introduced. All terminal points are easily accessible for taking voltage and current readings and a large meter movement is available. **Transvision Electronics, Inc., 460 North Ave., New Rochelle, N.Y.**

For more details circle #615 on mailing card.

(Continued on page 220)

PUSH BUTTON *Speed Selection*

from **to** **in seconds**

or to *any* intermediate speed, *instantly*

Teach modern methods with these strictly modern lathes that eliminate all hand belt shifting and deliver even the new high speeds with the touch of a button.

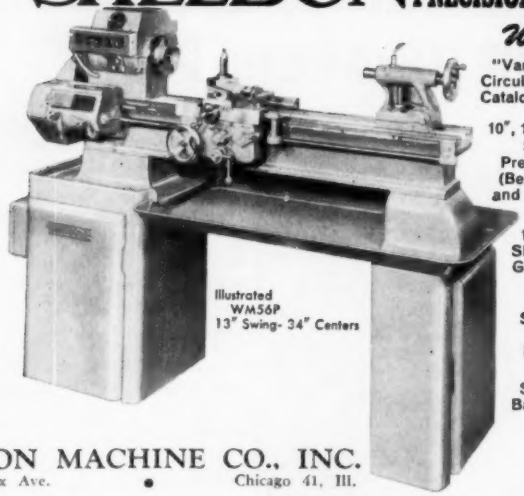
It's that easy!

The work is done by a motor driven speed changer. It accelerates or slows the lathe to any desired speed in seconds. With a 10:1 ratio, this new variable drive makes it easy to select from a wide range of speeds—200 to 2000 rpm in direct drive and 40 to 300 rpm in back gear.

Maximum stability and smooth power transmission are assured because the drive unit is oversized. All pulleys and shafts are fully supported (eight bearings). Double V-belts throughout the drive eliminate slippage and deliver full power to the spindle. Because of this rigidity and extra pulling power, this lathe will take heavy cuts at all speeds and precision finish cuts at high speeds.

It is a precision lathe moderate in price with the versatility for safety teaching both beginning and advanced students.

SHELDON *Variable Speed* **PRECISION LATHES**



Illustrated WM56P 13" Swing- 34" Centers

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10", 11", 13" and 15" SHELDON Precision Lathes (Bench, Pedestal and Cabinet types)

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13" and 15" SEBASTIAN Geared Head Lathes

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One-Fold Portable Table with Bench. Available in 6-foot, 7-foot, 8-foot, 10-foot, and 12-foot sizes. (Available with or without bench.)

MORE Economical Use of Storage and Floor Space— Store Erickson One-Fold Tables in series in only 11½" of space, center to center. Save up to 50% of necessary storage area. Slim, trim design cuts storage space—there are no exposed braces, tubes, or pipes. Tops are protected from damage through exclusive Hamilton nesting. Hamilton Erickson tables permit maximum use of all floor space, even in narrow corridors or when pillars interfere.

MORE Comfortable Seating—Erickson bench tables are easy to get in and out of—no crossbars to bump or straddle, no bench sag or bounce as people are seated. Seat 16 solidly and comfortably, with trays. Understructures are clean, uncluttered, snag-free.

MORE Saving of Custodial Time—Quick, single-cycle unfolding operation—one motion unlocks and opens this table—and it closes in the same manner. Powerful torsion springs do the work.

MORE Strength, Dependability—These tables give you strength in steel where it's needed—under the top and benches. Heavy steel framework provides underbench and table support necessary with bouncing children or stout matrons. Sound engineering and construction assure years of maintenance-free service.

WRITE TODAY for full information and planning assistance on the use of any or all of the Erickson products shown here.

CHOOSE FROM MORE THAN 60 PORTABLE MULTIPURPOSE UNITS

ONE-FOLD TABLES (without bench)

WALL TABLES

CHORAL RISERS

PORTABLE PLATFORMS

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ERICKSON *portable products division*

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new dimensions in time and space efficiency for: physicians; dentists; industrial, hospital, school laboratories; draftsmen; printers; libraries; home laundries.

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ILMARI TAPIOVAARA

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SINCE 1830 MAKERS OF FURNITURE FOR PUBLIC USE

An Overhead Projector is only as Valuable as its **TOTAL USEFULNESS** in the Classroom

The KEYSTONE Overhead Projector

Available with your Keystone Overhead Projector — at reasonable cost — are these prepared materials:

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5. **Tachistoslides** for teaching Reading, Music, Typewriting, Shorthand, Arithmetic, and Foreign Languages.

6. **PRACTICAL USABLE Handmade Slides** and Transparency Materials. Etched Glass Slides used with ordinary lead pencil.

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Because they are designed and fabricated under the supervision of licensed professional engineers, all steel used conforms to the Standard Specifications of the American Society of Testing Materials, and the shop practices employed insures the best of quality in workmanship.

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"the safe way out"
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They're all yours in the Von Duprin 66, the exit device that introduced the industry to the practical beauty of stainless steel.
Available in rim, mortise lock and vertical rod models (in bronze as well as stainless steel) with a smart new series of matching outside trims.
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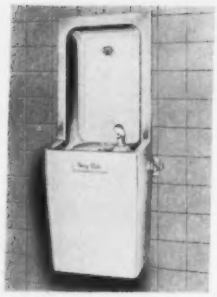


Wall Mount Fountain-Cooler Is Semi-Recessed

Wall mounted to facilitate floor maintenance and save space, the new Halsey Taylor Cooler-Fountain is completely enclosed in type 304 stainless steel. The compact, semi-recessed unit projects only 7½ inches from the wall, is 14¾ inches wide and 39 inches high. It has a water-cooled condenser and six-gallon per hour capacity. The stainless steel not only makes it easy to keep clean, but with the streamlined design, it is an attractive addition to corridor or room. **The Halsey W. Taylor Co., Warren, Ohio.**

For more details circle #616 on mailing card.

Lime-A-Way Acid Detergent Removes Stains and Soil

An acid detergent for quickly removing stains and food soil which are unaffected or slowly removed by alkaline detergents, Lime-A-Way is safe to use and will not harm skin, nylon, metal surfaces, china or glassware, according to the report. It is developed primarily for use in deliming dish machines, steam tables and other areas on which lime builds up as a result of hot water and steam. It can also be used to clean coffee urns, drinking fountains, glassware and stainless steel surfaces and for restoring aluminum surfaces and whitening cement or tile. **Economics Laboratory, Inc., 250 Park Ave., New York 17.**

For more details circle #617 on mailing card.

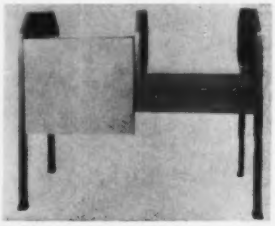
Housekeeping Cart Facilitates Maintenance

Mounted on four-inch ball bearing rubber-tired casters, the new Atlas Janitors and Maids Cart is easy to maneuver and has protective rubber bumpers on corners. The cart has three shelves for linen storage, a platform for holding mop buckets and wringer, holders for mops and brooms, a large sized laundry bag which fastens at the handle, and a top tray for holding sanitary supplies. It is constructed of heavy gauge steel, finished in Hammerloid gray baked enamel. **Atlas Products Co., 3825 S. Racine, Chicago 9.**

For more details circle #618 on mailing card.

Pixmobile Audio-Ed Booth Provides Student Comfort and Safety

Designed to provide student convenience, safety, acoustical control, isolation, and a comfortable working height, the Pixmobile Audio-Ed Language Laboratory Booth is constructed of heavy gauge steel to ensure strength and rigidity throughout the booth as well as the divider panels. Available in standard and

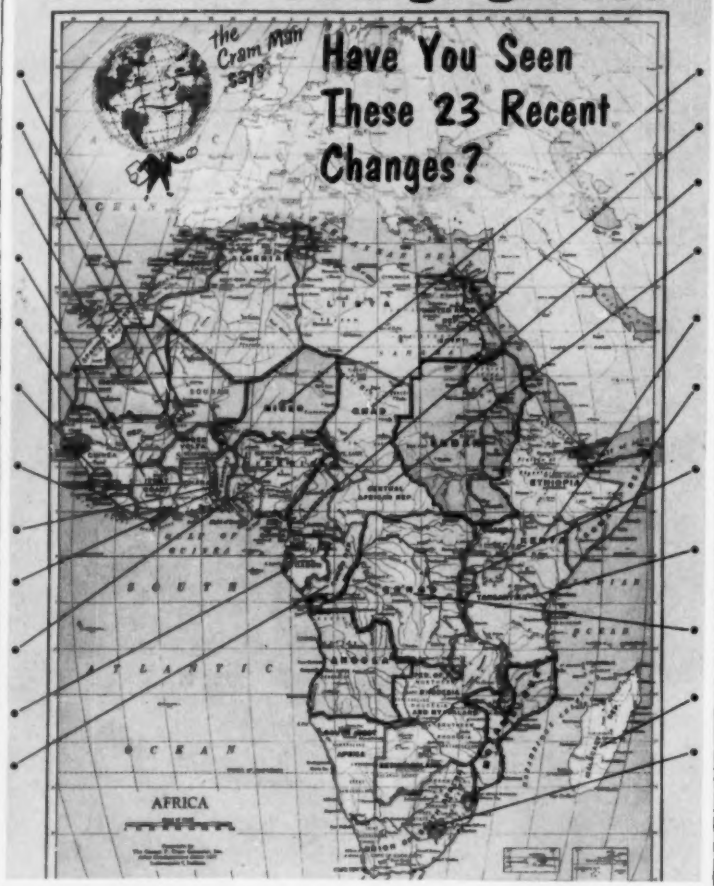


convertible-top models, in continuous booths of from two-student positions to as many as may be desired for each row, the Pixmobile units surround the student with acoustical panels on three sides. Desk tops are 29 inches from the floor, work surfaces are covered with laminated plastic, and all edges and corners are rounded to provide maximum student safety. **Advance Furnace Co., 2310 E. Douglas, Wichita 7, Kans.**

For more details circle #619 on mailing card.

(Continued on page 224)

Africa's Changing Face



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KNOWING THE CORRECT ANSWERS TO QUESTIONS ABOUT CANCER COULD SAVE YOUR LIFE

		TRUE	FALSE
1	Leukemia is cancer of the blood-forming tissues.	TRUE	FALSE
2	All forms of life, including plants, can develop cancer.	TRUE	FALSE
3	Cancer is not contagious.	TRUE	FALSE
4	More men than women die of cancer.	TRUE	FALSE
5	Pain is a late cancer symptom.	TRUE	FALSE
6	Cancer can strike anyone at any age.	TRUE	FALSE
7	A biopsy (examination of suspected tissue removed from the body) is the only method of proving whether cancer is present.	TRUE	FALSE
8	Surgery or irradiation, or both, are the only means of curing cancer.	TRUE	FALSE
9	An annual health checkup is one of the most effective weapons against cancer.	TRUE	FALSE
10	Over one million Americans are alive today, cured of cancer.	TRUE	FALSE

SCORING: 10: Excellent
6 to 9: Fair
5 or less: Danger! For your own protection, learn more about cancer. Write to "Cancer" –c/o your local post office.

ANSWERS: ALL TEN OF THESE STATEMENTS ABOUT CANCER ARE TRUE.

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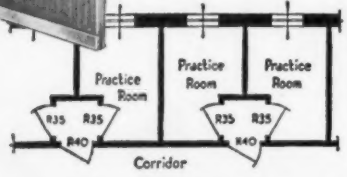

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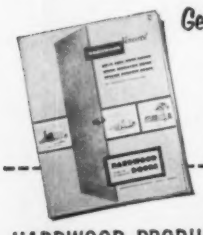

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Colorful Game-time Climber Formed in Shape of Turtle

A new climber formed in the shape of a jumbo turtle is approximately two feet high and has indented steps on three sides that permit youngsters to climb over and around it, or to sit on it. Of rugged fiber-

glass reinforced with structural steel tube, the green and orange Turtle Climber will not chip, peel or fade and is strong, lightweight and portable. **Game-time, Inc., Litchfield, Mich.**

For more details circle #620 on mailing card.

Concentrated Liquid Cleaner for Hard Surfaces

In addition to providing maximum cleaning action, Liquid Ben Hur meets the specifications of the Asphalt Tile Institute and Rubber Manufacturers Association. It cleans efficiently without producing excessive foam, thus eliminating baseboard spotting, cleans without stripping wax, picks up easily, and lifts stubborn soil without softening, bleeding or staining hard floor covering. Ben Hur can be used on terrazzo, marble, concrete, vinyl tile, linoleum, sealed wood floors, vinyl-asbestos tile, steel, painted wood or plastic upholstered furniture, rubber tile, leather, ceramic tile, venetian blinds, porcelain, and wall coverings. **Colgate-Palmolive Co., 300 Park Ave., New York 22.**

For more details circle #621 on mailing card.

Compact, Lightweight "Envoy" Is Budget-Priced Dictating Machine

Simple controls, built-in indexing system for easy finding of words and phrases for both dictator and transcriber, and low

price are features of the new "Envoy" tape dictating and transcribing machine. Weighing less than nine pounds, the machine is compact and easily carried to place of use. It is equipped with a 90-minute tape and has controls for fast forward and fast reverse. The versatile machine is simple enough for use anywhere for dictating correspondence, and for recording conferences, interviews and telephone conversations. **Edison Voicewriter Div., McGraw-Edison Co., West Orange, N. J.**

For more details circle #622 on mailing card.

(Continued on page 226)

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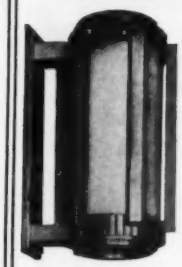

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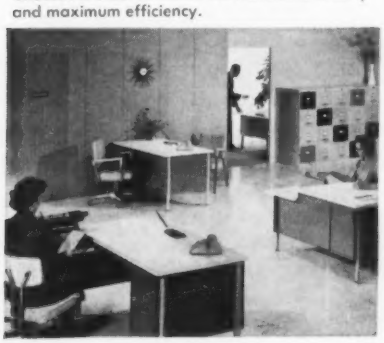

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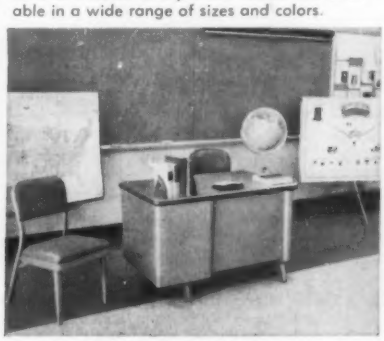

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A collection of the facts, ideas and opinions exchanged during the Conference, this is the first attempt to survey the problems of physics education, to look at the field as a whole. It deals with physics education from high school through the graduate level, in the light of education systems in the major countries of the world.

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- Selection of students
- Work of the American Physical Science Study Committee
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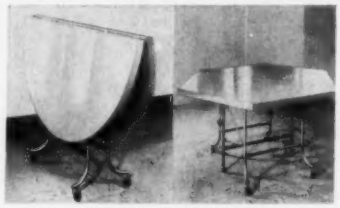
Designed to nest and store compactly, the new line of Schieber portable folding "shape tables" can be folded and rolled from the room or against the wall on their own markproof neoprene swivel casters, leaving the area clear for other uses and eliminating the need for table trucks. Available in round, hexagon and square shapes in two sizes, 48 or 60 inches across



the center, the tables are equipped with four tubular metal legs with cross supports that curve outward for stability and two crutch-tipped center legs that fold down firmly on the floor to prevent shifting. Table tops are of seven-ply wood with decorative, washable Formica surfaces in a choice of colors. **Schieber Mfg. Co., 12955 Inkster Rd., Detroit 39, Mich.**

For more details circle #623 on mailing card.

Economy Priced Bulletin Board Offered in Takork

Featuring the Congoleum-Nairn E-Z Clean Cork composition wear layer and Clear Cushion vinyl impregnated felt backing, Takork is an economy priced bulletin board cork available in gray, green or tan 49 inches wide. It can be used in framed cork bulletin boards, and for application to compressible backing boards and worn out bulletin boards. **Congoleum-Nairn Inc., 195 Belgrove Drive, Kearny, N.J.**

For more details circle #624 on mailing card.

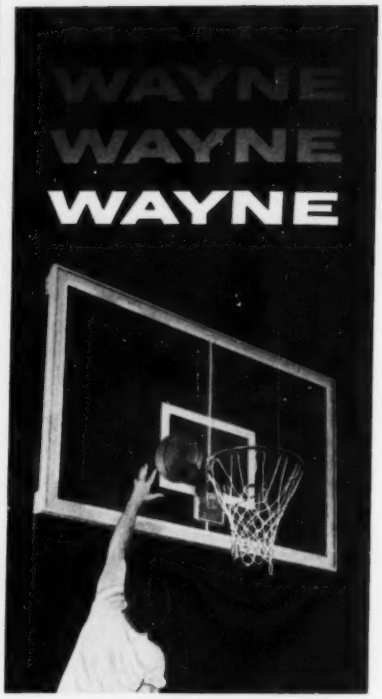
Model 3-A Electro-Air Unit for Single Room Use

The new "Single Room" Model 3-A Electro-air Cleaner has a 200 cfm capacity and is designed to remove smoke, pollen, dust, dirt and other air-borne par-

ticles from small areas, such as class rooms, offices, teachers' rooms and conference rooms. Completely re-styled, it has a recessed instrument panel, beaded chrome trim and plastic control knob. The new electrical system has an automatic high tension connection and a new system of electrical interlock for safety and ease of servicing. **Electro-air Cleaner Co., Inc., Olivia & Sproul, McKees Rocks, Pa.**

For more details circle #625 on mailing card.

(Continued on page 228)



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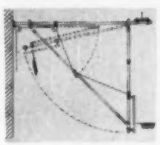
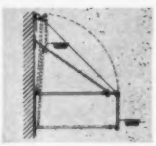
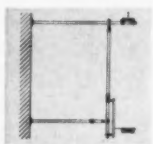


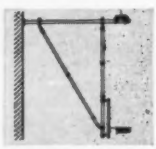
Backward fold ceiling mounted



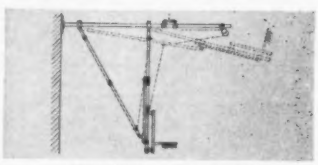
Fold up, wall mounted



Stationary, wall braced, ceiling mounted



Stationary, ceiling mounted



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use as room dividers, against the wall, free standing, back to back, or in conjunction with other Grade-Aid classroom storage equipment. Available in 36 or 48-inch widths, the cases are finished in tan or gray DuPont DuLux enamel. **Grade-Aid Corp., 46 Bridge St., Nashua, N. H.**

For more details circle #626 on mailing card.

Ice-Clearing Product Has Deep, Long Action

Improved power in snow-melting action is built into Ice-Foe, the non-toxic ice-melter for walks and drives. The new big particles give deep, long action through Pen/Ax which is scientifically blended into Ice-Foe for penetration to the bottom of the ice barrier for sustained, more efficient melting. **Walton-March, 1592 Deerfield Rd., Highland Park, Ill.**

For more details circle #627 on mailing card.

Popcorn Warmer Helps Speed Sales

Offering over eight cubic feet of storage capacity, the new Cretors Mark I counter Popcorn Warmer keeps popcorn hot, crisp and ready for immediate sale

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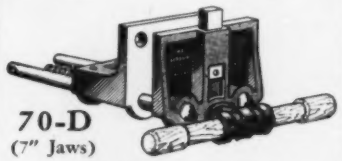
For more details circle #628 on mailing card.

(Continued on page 232)

Improved ROLLER NUT RAPID ACTING VICES

The simplest in construction the longest wearing, most satisfactory in action, of any woodworking vise on the market.



70-D
(7" Jaws)

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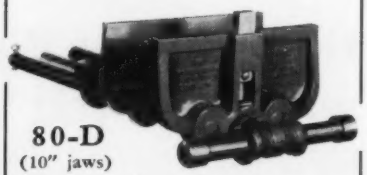

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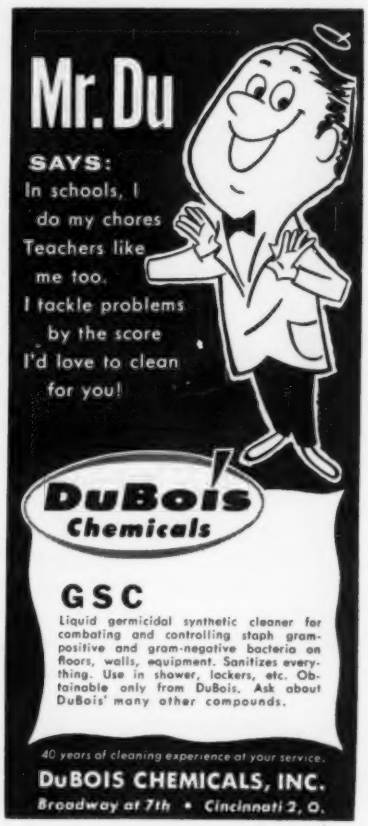
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Liquid germicidal synthetic cleaner for combating and controlling staph gram-positive and gram-negative bacteria on floors, walls, equipment. Sanitizes everything. Use in shower, lockers, etc. Obtainable only from DuBois. Ask about DuBois' many other compounds.
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"We're working on intermediate French."

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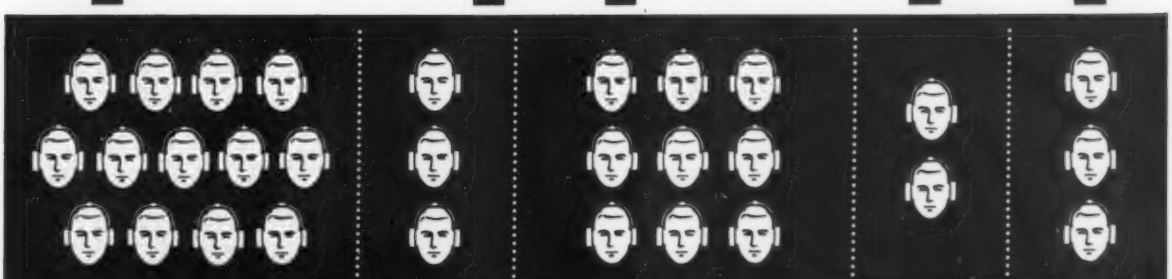
"We are studying elementary French."

"Nous avons manqué la classe hier et nous ratrappons les leçons que nous avons manquées."
"We were absent yesterday and are making up the lessons we missed."

"Ce système-ci nous permet d'apprendre d'autant plus rapidement, nous suivons des cours de français plus avancés."
"This system enables us to learn so much faster, we are taking more advanced French lessons."

"Hacemos tareas en español durante nuestro período de estudios."
"We're working on Spanish assignments during our study period."



One classroom...one console...five different activities!

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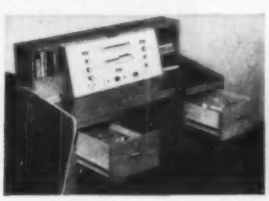
In this typical classroom situation, one 30-position, 2-channel Edwards Language Laboratory serves five simultaneous activities (4-channel models available when required). 13 beginners work on a master lesson using Lesson Channel 1. Nine intermediate students work on a second lesson using Channel 2. Three more advanced students work with tapes saved from an advanced class, recording their responses while erasing old practice material recorded by previous students. Three absentees make up work on tapes saved from a previous lesson. Two students use a free period for some independent lab work. The language laboratory is utilized to the fullest extent. Any number of separate lesson activities or subjects may be handled. The instructor has complete control over all 30 booths and can monitor or communicate with any student at any time. The instructor can utilize the Edwards Language Laboratory's extreme flexibility to include visual presentations, channeling sound for films, slides, TV, etc. through the lesson channel's auxiliary input. He can use the function selector's RECITE position to channel the recitation of one student (or a conversation between himself and one student) to the rest of the group. The instructor may pick up any student tape he desires to check, or to hold as a master tape for later use. **There are many language laboratories, but only Edwards offers such versatility and ease. Write today for detailed literature on this more effective teaching tool for creative language instruction.**



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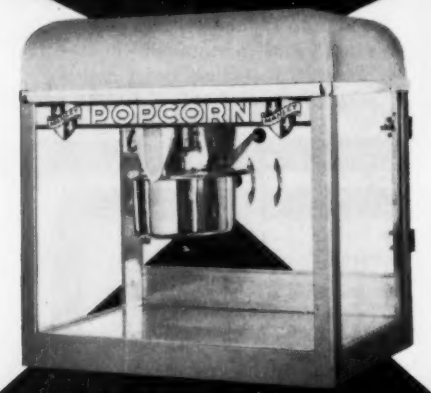
If your school has 30 x 20″ table space
. . . and the desire to finance
"extras" for students

Join those* making 75% gross profit



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MANLEY JEWEL
Popcorn Machine

Band uniforms, sports equipment, hi-fis and phonographs, motion picture screens and projectors—these are but a few of many "extras" schools are buying with profits from Manley Jewels.

This counter-size, budget-priced machine costs less than half regular floor-sized models, operates on a normal 115-volt circuit. Its well-lighted glass-enclosed case helps boost sales; the heated cabinet floor keeps popcorn hot; and the entire popping operation requires just four simple steps.

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Because fresh, hot, healthful popcorn finds eager patrons at virtually every school event—from athletic games to class parties and teen-towns—the Jewel soon pays for itself and profits mount up fast.

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*Hundreds of schools across the nation. Names on request.

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TURTLE CLIMBER

In Myrtle the Turtle, children find a playground version of a favorite pet that they're bound to love! This fascinating, new climber is 23″ high by 82″ long, and made of rugged fiberglas. Reinforced by steel tubing, it stands like Gibraltar against abuse. Portable, it's in bright life-time impregnated green, with orange and black pattern stripes. Recessed footholds allow tots to stand on sides, climb, or sit on top.

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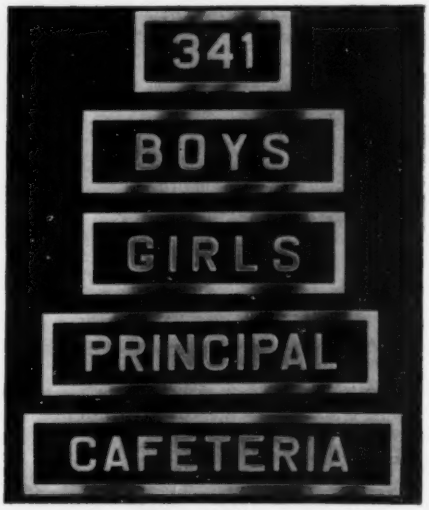

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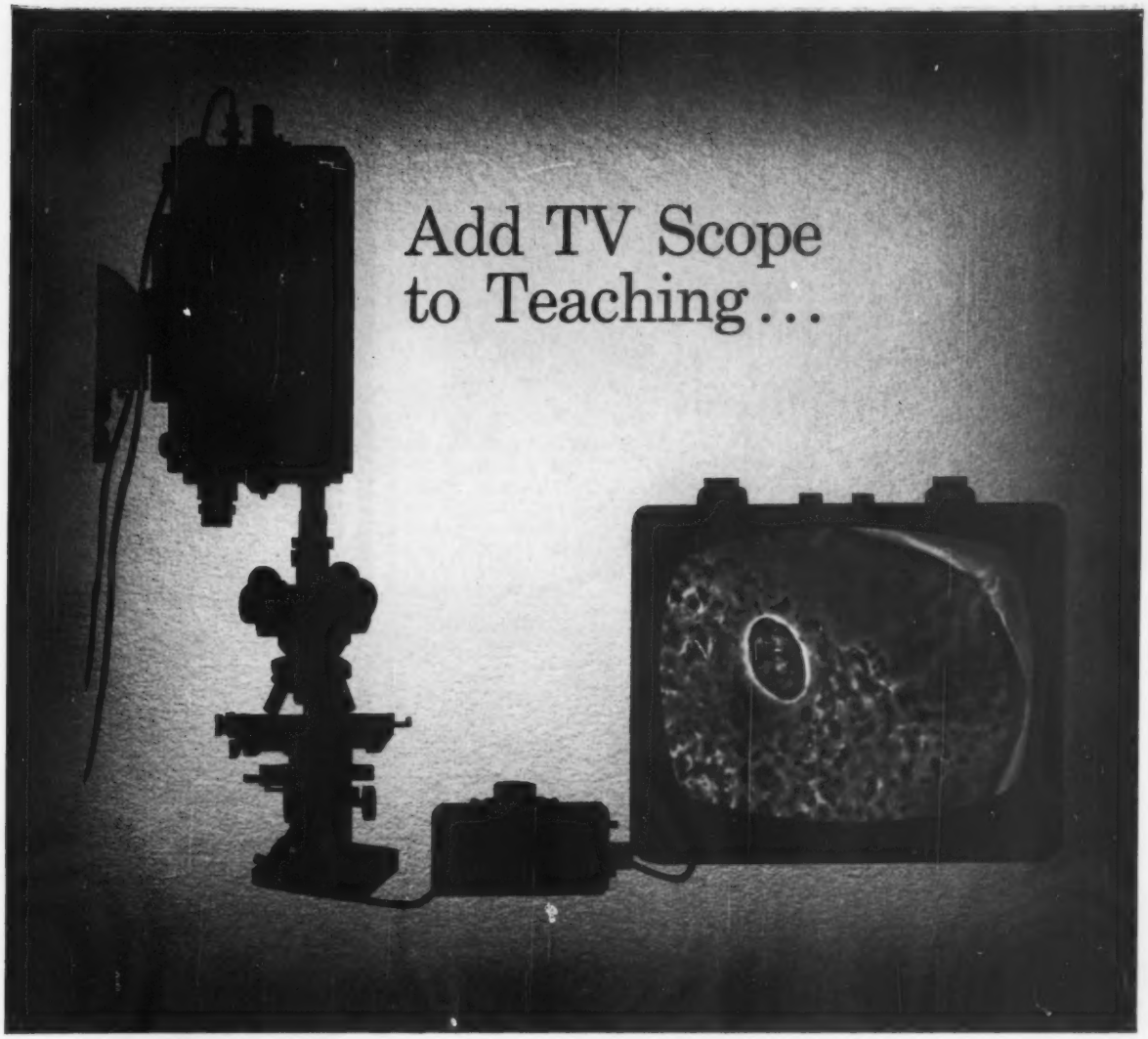

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Now Closes The Cost "Gap" On Closed Circuit TV

A COMPLETE system, including a research microscope, TV camera, and 17" monitor with 300 line horizontal resolution is now available from Elgeet of Rochester for **UNDER $1500.** A COMPLETE system with 600 line resolution is available for **UNDER $2200.**

Elgeet Closed Circuit Television Microscope-Integrated Systems, at these AMAZINGLY LOW prices, are the finest quality teaching tools that educators can buy for student-training programs.

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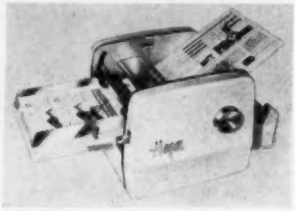
Conqueror Electric Paper Folder Equipped with Automatic Counter

Short or long run folding jobs are done quickly and accurately with the new Conqueror automatic Paper Folder, Model EF-1, an electrically driven machine that feeds, folds and counts 110 sheets a minute and deposits them through a belt delivery into a neat stack in an adjustable receiver. Featuring simplicity and ease of



operation, the unit has only two quick-set conveniently located fold controls to adjust, and feeds only one sheet at a time, eliminating the need for "fanning" the sheets and making it possible to include a counter as standard equipment. A hand operated model is also available for shorter, occasional runs. **Heyer Inc., 1850 S. Kostner Ave., Chicago 23.**

For more details circle #629 on mailing card.

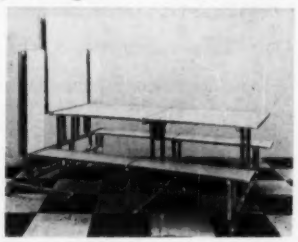
Waxless Floor Finish Is Bacteriostatic

Residual bacteriostatic properties in Plexin floor polish continue to retard bacteria growth as long as the polish is on the floor. Independent laboratory tests showing the bacteria-proofing action are available from the manufacturer. Plexin is a self-polishing, non-skid floor finish, applied with applicator or mops, to wood, terrazzo, marble, cork, rubber, linoleum, asphalt, vinyl or other composition tile floors. It is scuff-resistant and easily maintained by routine buffing. **Puritan Chemical Co., 916 Ashby St., N.W., Atlanta, Ga.**

For more details circle #630 on mailing card.

Storage in Limited Space With Rollaway Compact Units

Easily stored in limited space because of their compact folded size, new Rollaway folding table and bench units are



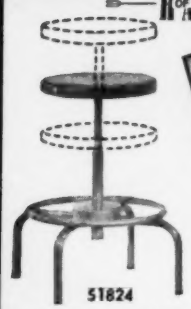
designed for all institutional applications where built-in wall cabinets are not feasible. Available in 12 and 14-foot lengths, the table/bench combinations roll smoothly on ball bearing, swivel-action hard rubber wheels and are equipped with a hydraulic piston valve that controls the rate of opening, ensuring effortless, safe operation. **Son-Nel Products Co., 900 19th Ave., Oakland 6, Calif.**

For more details circle #631 on mailing card.

(Continued on page 234)

Famous Harco "LIFT-LOK" Chairs and Stools

HARCO



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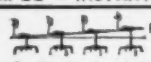

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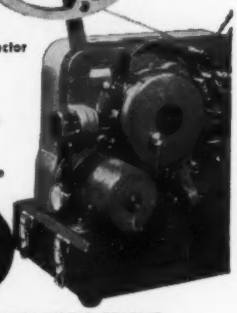

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V-Line Volume Refrigerators Have Floor Loading

Designed to receive standard utility racks, the new group of Victory V-line

Floor Loader Refrigerators is designed to increase volume storage, feeding and service. The all stainless steel remote units will take almost any size utility rack and are available in one, two, three and four-section models, standard and pass-throughs. The racks roll easily into the refrigerator, positioned by special adjustable guide bars. **Victory Metal Mfg. Corp., Plymouth Meeting, Pa.**

For more details circle #632 on mailing card.

Sheet Metal Machine Is Small and Compact

Small and compact enough for shop classrooms, the new model P-2 sheet metal machine by Pullmax has the 5/32 inch capacity of the large machines. It is capable of doing all twelve standard Pullmax operations to permit many interesting sheet metal projects by students. **American Pullmax Co., Inc., 2455 N. Sheffield Ave., Chicago 14.**

For more details circle #633 on mailing card.

Hot and Cold Disposable Cups of Foamed Plastic

Thermokup is the name given to a lightweight, sturdy cup, formed of Pelaspan expandable polystyrene beads made by Dow Chemical and fully disposable. The foamed plastic acts as an insulator

both to maintain temperature of either hot or cold beverages, and to protect the user from discomfort when the cup is used for hot drinks. There is no possibility of sogginess or of leakage since the one-piece molded construction eliminates seams, and there is no taste transfer. Thermokups are distributed in the seven Western states by **Crown Plastic Cup Co., Fort Worth, Texas,** and in the rest of the country by **Mid-West-Pak Corp., Belvidere, Ill.**

For more details circle #634 on mailing card.

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WHITE TYMSAVER OUTFIT... A FAMOUS COMBINATION OF THE "CAN'T SPLASH" WRINGER AND OVAL BUCKET ENGINEERED TO DO A BETTER JOB QUICKER

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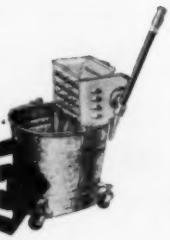

WHITE

IS THE WORD FOR CLEAN

WHITE MOP WRINGER COMPANY, FULTONVILLE 20, N.Y.

Literature and Services

• A new 33-page illustrated catalog of **16mm. Motion Pictures** describes 35 films available on a loan basis that cover a wide range of general-interest topics on steel and its use. Offered by Republic Steel Corp., 1436 Republic Bldg., Cleveland 1, Ohio, the booklet includes film order forms.

For more details circle #635 on mailing card.

• **"Fume Hoods, FH-6 Catalog"** covers the full line of "Guided Airflow Fume Hoods" manufactured by Metalab Equipment Co., Hicksville, N.Y. The 52-page booklet, printed in color, describes new principles of air removal engineering pertaining to Fume Hoods developed by the research department of Metalab, and is designed to serve as a guide to planning, lighting, constructing and employing air removal equipment for laboratories.

For more details circle #636 on mailing card.

• Descriptive information and illustrations of each type of **All-Steel and Aluminum Portable Bleachers, Steel Deck Grandstands and Permanent Grandstands** manufactured by Berlin Chapman Co., Berlin, Wis., are presented in a new four-page folder.

For more details circle #637 on mailing card.

• **"Two Seconds of Freedom"** is the intriguing title of a new textbook by Frank LaDue and James Norman, rebound tumbling experts, indicating the correct path of progression and the "how" and "why" of the skills involved in the sport. The book is available through Nissen Trampoline Co., 215 A Ave. N.W., Cedar Rapids, Iowa.

For more details circle #638 on mailing card.

• **"Architectural Design Considerations For Language Laboratories"** is the title of a technical booklet published by the research department of DuKane Corp., St. Charles, Ill. The non-commercial publication, available to school officials, architects and engineers, indicates many factors to be considered in planning a laboratory for optimum educational effectiveness.

For more details circle #639 on mailing card.

• Diagrammatic drawings of recreational areas for baseball, softball, football, basketball, tennis and volleyball, with suggested Stan Gard Pre-packaged units of chain link fencing for each, are presented in an eight-page reference guide, **"Field and Court Dimension Charts,"** available from Robertson Steel & Iron Co., 208 Commerce St., Cincinnati 2, O.

For more details circle #640 on mailing card.

• How Gregg Shorthand can be practiced without teacher participation, and students can practice indefinitely is shown in a folder entitled **"A Remarkable New Classroom Tool."** Describing the revolutionary Echo-Matic cartridge system developed by Cousino Electronics Corp., 2107 Ashland Ave., Toledo 2, Ohio, for use with the Mag-Matic Tape Repeater so that one or several students may use the tape in a complete shorthand laboratory, the folder discusses the complete Gregg Shorthand Course now available on tape.

For more details circle #641 on mailing card.

(Continued on page 236)

HOW TO DO A BETTER JOB OF TEACHING LANGUAGES

Install Dictalab, the new electronic tape-teaching system that feeds pre-recorded lessons to students in individual, sound-proof booths. Students hear the language spoken correctly, as the teacher recorded it. Nothing to distract attention. From the master console, the teacher can monitor any student at the flick of a switch or speak directly to him . . . give personal attention to students who need it.

Dictalab's the ideal way to teach *mastery* of a language. It features quarter-track recording for tamper-proof student operation and can be used for teaching many other subjects.

Your school can begin its Dictalab language system with a modest, basic installation . . . add to it as the need grows. With Dictalab you get more than the finest equipment. You can be sure of prompt, skilled service by Dictaphone Corporation's *own* staff of factory trained servicemen, the largest in the field.

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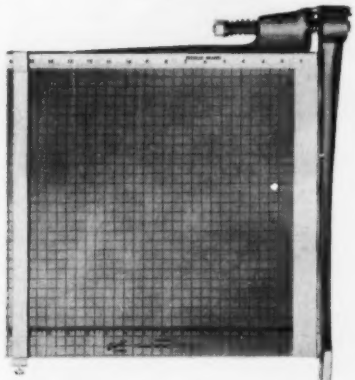

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• **Modern Electronic Language Laboratory Systems** as designed by Bernco Incorporated, 129 E. Market St., Indianapolis 4, Ind., and the story of their scientific development to produce the best possible teaching equipment, are discussed in full in a 28-page booklet. Subjects covered include research and development, custom design, engineering and installation, reliability, audio/perspective, aural/oral correction factor, service and the teacher-assistance program. A diagram of the Console Control Panel of the Bernco Mark VII Language Laboratory illustrates its versatility and advantages.

For more details circle #642 on mailing card.

• **"Electric Keyboard Mastery"** is the title of a new instructional booklet offered by Royal McBee Corp., Royal Typewriter Div., School Dept., 150 Westchester Ave., Port Chester, N. Y. Designed to help typing students quickly perfect electric typing technics, the booklet offers instructors comprehensive materials to use in teaching the basic transfer from manual to powered typewriters.

For more details circle #643 on mailing card.

• **"Public Seating by Hampden"** is the title of a 17-page catalog containing full information on the Titan and Gibraltar seating lines manufactured by Hampden Specialty Products Corp., Easthampton, Mass. Each item in the lines is fully illustrated and data include complete specifications, colors available, and construction features. Printed in color, the catalog includes a guide border illustrating the actual colors available in the series.

For more details circle #644 on mailing card.

• Prepared in text form, a colorfully illustrated 14-page brochure discusses the advantages of **Webster Unit Ventilator** for schoolroom heating, cooling and ventilating. Cost savings, engineering information and ratings are presented and a fold-out spread illustrates the Unit Ventilator operation through an exploded view of its components. Available from Warren Webster & Co., Inc., 17th & Federal Sts., Camden 5, N.J., the brochure also describes matching unitized cabinets designed to complement the ventilator in the classroom, and other elements for school use, including convectors, Walvector and cabinet unit heaters.

For more details circle #645 on mailing card.

• A handbook entitled **"Judging Engine Quality"** emphasizes the features of various designs which provide top performance at minimum cost. Available from Caterpillar Tractor Co., Engine Div., Peoria 8, Ill., the 28-page pamphlet includes cutaway illustrations and charts.

For more details circle #646 on mailing card.

• Designed to get the interest and cooperation of bus-riding school children, a **safety comic book featuring Casper, the friendly Ghost,** is offered by the Safety Education Dept., Superior Coach Corp., Lima, Ohio. Casper "instructs" children on how to conduct themselves in riding the bus to and from school to achieve the greatest safety. Casper is also featured in a poster on the same subject which is available for display.

For more details circle #647 on mailing card.

(Continued on page 238)

UNGUARDED KEYS!

AN OPEN INVITATION TO THEFT! VANDALISM!

Today's high cost of school property, equipment, and supplies, represents an *investment that must be protected!*

You get that protection with TELKEE—the modern key control system designed for *complete security plus convenience!* TELKEE files your keys—making them accessible to authorized personnel only!

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CATALOG NO. A-1360-E.C

These new perimeter type tables offer unlimited design possibilities and arrangements from standard interchangeable base units. They provide numerous advantages for new construction design as well as for use in remodeling for Chemistry, Physics, Biology and General Science laboratories. Our representative engineer will be pleased to discuss your requirements and show you the entire line of Peterson furniture that has been the choice of leading educators and industrial furniture users for more than 65 years.

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• Reprints of a discussion of **"Economic Missiles in the Cold War"** as presented by Herbert J. Mossien of the Instrument Division, Bausch & Lomb Inc., 635 St. Paul St., Rochester 2, N.Y., are available from that company.

For more details circle #648 on mailing card.

• Three teaching aids available for student use from the Vacuum Div., Singer Sewing Machine Co., 149 Broadway, New York 7, include an educational booklet entitled **"Three Vacuums for Good Homemaking,"** a filmstrip based on the booklet, and a recorded script. Information on the selection, care and use of a vacuum cleaner, plus a homemaking schedule, are covered in the material.

For more details circle #649 on mailing card.

• **"Comfort Conditioning With Light and Air"** is the title of a 24 page catalog (F 9768) containing complete information on combination light and air diffusers. Briefly stating the history and evolution of lighting and air distribution, and presenting data for selecting and predicting performance, the booklet, prepared by the Barber-Colman Co., 1300 Rock St., Rockford, Ill., and Day-Brite Lighting, Inc., 6260 N. Broadway, St. Louis 15, Mo., includes drawings illustrating how the new combination light and air diffusers are installed and balanced.

For more details circle #650 on mailing card.

• Two one-page bulletins on lighting layouts and a **Mounting Height Chart for Sports Areas** are available from General Electric Co., Schnectady 5, N.Y. No. OLP-1013, **Easy Lighting Layout for Football Field,** and No. OLP-1014, **Easy Lighting Layout for Baseball Field,** describe proper floodlighting design and include diagrams, recommendations, load requirements and other information.

For more details circle #651 on mailing card.

• The **Reguline Catalog** and **Quadraline Catalog,** two new full color books available from American Desk Co., Temple, Tex., describe and illustrate Reguline tubular steel and wood furniture and Quadraline, the school furniture that combines rugged quadratic tubing with trim, graceful lines.

For more details circle #652 on mailing card.

• Two new six-page folders, **Flexicore Facts No. 85 and No. 87,** describe the use of precast concrete frame, floor and roof units in the construction of two high schools, and are available from Flexicore Co., Inc., 1932 E. Monument Ave., Dayton 1, Ohio.

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• The library of high fidelity recordings of the Voices of Great Minds, available through Academic Recording Institute, 18 E. 50th St., New York 22, is described in a booklet entitled **"Time for Ideas."** The titles of the series of ten records, recorded by great minds in the educational and literary world of today in interview form, are presented in the booklet, with information on both the "experts" and their interviewers. Each set of ten records makes up a practical course in the cultural subjects presented, and brings the actual voices into any classroom.

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(Continued on page 240)

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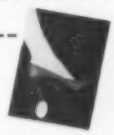

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• The complete line of **Hobart Food Machines** is described and illustrated, with individual features of each, in a 56-page booklet available from The Hobart Mfg. Co., Troy, Ohio.
For more details circle #655 on mailing card.

• **The Shure General Catalog No. 60A of Microphones and Electronic Components** is a 28-page booklet presenting specifications and prices of 30 microphone models, microphone accessories, magnetic recording heads and other equipment. Available from Shure Brothers, Inc., 222 Hartrey Ave., Evanston, Ill., the catalog covers the full line of sound equipment.
For more details circle #656 on mailing card.

• The newest developments in electronic language teaching equipment, defining the technics of electronic teaching in non-technical language, are presented in an eight-page pamphlet, **Language Teaching Systems (AL-461)**, offered by Hamilton Mfg. Co., Two Rivers, Wis.
For more details circle #657 on mailing card.

• The comprehensive selection of electronic parts and equipment for use in schools, classrooms, laboratories and shops is illustrated and described in the 444-page **1961 Electronics Catalog** now available from Allied Radio Corp., 100 N. Western Ave., Chicago 80.
For more details circle #658 on mailing card.

• A new 48-page catalog illustrates and describes the expanded line of **Kem Tech secondary school Science Furniture** for Chemistry, Physics, Biology and General Science. In addition to the furniture and equipment cataloged with specifications, the booklet, available from Kewaunee Technical Furniture Co., 3004 W. Front St., Statesville, N.C., includes eleven science room floor plan layouts and roughing-in details.
For more details circle #659 on mailing card.

• **"Finishing Northern Hard Maple the MFMA Way"** is the title of a folder giving a revised list of laboratory tested and approved floor finishing products for use on Northern Hard Maple floors. Available from the Maple Flooring Manufacturers Assn., 35 E. Wacker Drive, Chicago 1, the listing now includes both the penetrating sealer and the Bakelite-varnish type of floor finishes, together with a number of products tested under the epoxy and high solids, high viscosity provisions of the current specification.
For more details circle #660 on mailing card.

• Descriptive information on the line of **gasoline and electric Trucksters** for use in personnel transportation, light materials handling and maintenance operations in large and multi-building schools and colleges is given in a six-page folder entitled **"They're All Muscle,"** available from Cushman Motors, Lincoln, Neb.
For more details circle #661 on mailing card.

• The complete line of **Chemclad plastic-laminate faced doors** is described and illustrated in a new four-page brochure available from Bourne Mfg. Co., 1573 E. Larned St., Detroit 7, Mich. The folder includes data on special construction features, various styles and specifications.
For more details circle #662 on mailing card.

• A reprint of a report on teaching machine shorthand is offered by Stenographic Machines, Inc., 8040 N. Ridgeway Ave., Skokie, Ill. Entitled **"Machine Shorthand — A Controlled Experiment in a Typical High School,"** the report covers a two-year study.
For more details circle #663 on mailing card.

• The Green Label Line of floor cleaning equipment is described in a new catalog, **Form No. J-800**, available from Market Forge Co., Garvey St., Everett 49, Mass. The eight-page, two-color booklet features photos of the complete line and includes detailed information.
For more details circle #664 on mailing card.

• **A brochure, IN-296A,** describing the qualities and uses of Colorlith asbestos-cement monolithic sheet material for laboratory tops, sinks, shelves, chalkboard and many other purposes, is offered by Johns-Manville, 22 E. 40th St., New York 16. Tables of physical and chemical resistance properties and data on application and maintenance are also included.
For more details circle #665 on mailing card.

Film Releases

"Seconds to Safety," 15 min. color film developed to instruct teachers and school officials in action to avert tragedy after a school fire is discovered. **Aetna Casualty & Surety Co., Hartford 15, Conn.**
For more details circle #666 on mailing card.

"Semi-Conductors: Part I," 21-min., and "Semi-Conductors: Part II," 22 min., both 16mm black and white sound films for high school and college electronics as well as physics and chemistry departments. **Bray Studios, Inc., 729 Seventh Ave., New York 19.**
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Three black and white films on World War I, "The Background," "The War Years," and "Building the Peace," each usable as a single unit, for high school history classes. "The Mississippi River: Background for Social Studies," 13½ min. black and white or color film, for intermediate grades and junior high school. **Coronet Instructional Films, 65 E. South Water St., Chicago 1.**
For more details circle #668 on mailing card.

Suppliers' News

Crescent Metal Products, Inc., manufacturer of Cres-Cor mobile aluminum food service equipment, announces consolidation of its factories into a new plant, with triple the combined area of the three former locations, at **12711 Taft Ave., Cleveland 8, Ohio,** to start the 25th year of operation under **George T. Baggott,** president and founder.

John J. Nesbitt, Inc., State Rd. & Rhawn St., Philadelphia 36, Pa., manufacturer of heating, ventilating and air conditioning equipment, announces acquisition of the assets of the **Norman Products Co., Columbus, Ohio,** manufacturer of gas-fired heating, ventilating and air conditioning equipment. It is stated that the **Norman Products Co.** will continue under its same management as a division of Nesbitt with no changes in personnel or policies.

INDEX TO ADVERTISEMENTS

USE THIS PAGE TO REQUEST PRODUCT INFORMATION

The index on this and the following page lists advertisements in this magazine alphabetically by manufacturer. For additional information about any product or service advertised, circle the manufacturer's key number on the detachable postcard and mail it. No postage is required.

Products described in the "What's New" pages of this magazine also have key numbers which appear in each instance following the description of the item. For more information about these items, circle the appropriate numbers on the postcard and mail it, without postage, to The Nation's Schools.

Key		Page
669	Abernathy Vise & Tool Mfg. Co.	228
670	Acme Chemical Company	130
671	Acme Visible Records, Inc.	138
672	Airkem, Inc.	157
673	Ajusto Equipment Company	202
674	Alberene Stone, A Division of the Georgia Marble Company	238
675	All-Steel Equipment Inc.	225
676	American Bitumuls & Asphalt Co.	172
677	American Bridge Division, U. S. Steel Corporation	44, 45
678	American Crayon Company	126
679	American Desk Mfg. Company	195
680	American Gas Association	12
681	American Gas Association	203
682	American-Standard Corporation Industrial Division	57
683	Americana Corporation	34, 35
684	Apsco Products, Inc.	56
685	Argus Cameras	131
686	Arlington Seating Company	Cover 4
687	Baker-Roos, Inc.	228
688	Bally Case & Cooler, Inc.	186
689	Bastian-Blessing Company	111
690	Bausch & Lomb Incorporated	170
691	Bay West Paper Company	158
692	Berlin Chapman Company	176
693	Beseler Company, Charles	208
694	Bogen-Presto Company	192
695	Bradley Washfountain Company	194
696	Brillo Mfg. Company, Inc.	223
697	Brown Company, M. D.	189
698	Buckner Manufacturing Co., Inc.	51
699	Buckstaff Company	132
700	Burgess-Manning Company	133
680	Carrier Air Conditioning Corporation	12
701	Chevrolet Division	32, 33
702	Church, C. F. Division American-Standard	53
703	Cincinnati Time Recorder Company	160
704	Clarin Mfg. Company	134
705	Clarke Floor Machine Company	125
706	Collier & Sons, P. F.	8, 9
707	Connor Lumber & Land Company	189
708	Corbin Division, P. & F.	49
709	Coronet Instructional Films	14
710	Cram Company, Inc., George F.	220
711	Da-Lite Screen Company	128
712	Davies-Young Soap Company	121
713	Dettra Flag Company, Inc.	144
714	Dictaphone Corporation	235
715	DuBois Chemicals, Inc.	214
716	DuBois Chemicals, Inc.	228
717	Dudley Lock Corporation	136
718	DuKane Corporation	210
719	Duke Mfg. Company	181
720	Dunham-Bush Inc.	123
721	Du Pont de Nemours & Co., Inc., E. I.	239
722	Eastman Kodak Company	137
723	Edwards Company, Inc.	229
724	Electronic Teaching Laboratories	60
725	Elgeet Optical Company, Inc.	231
726	Everett Piano Company	184, 185
727	Fairchild Camera & Instrument Corporation	143
728	Field Enterprises, Inc.	147
729	Ford Motor Company	58, 59
730	Game-Time, Inc.	230
731	Garrett Tubular Products, Inc.	232
732	Gaylord Brothers, Inc.	196
733	Glynn-Johnson Corporation	169
734	Gougler Keyless Lock Company, C. L.	204
735	Graflex, Inc.	213
736	Gravely Tractors	204
737	Grolier Society Inc.	Cover 2
738	Grolier Society Inc.	140, 141
739	Gruber Products Company	187
800	Hamilton Mfg. Company	16
801	Hamilton Mfg. Company	217
802	Hardwood Products Corporation	224
803	Harwald Company	232
804	Herrick Refrigerator Company	206
805	Heyer Corporation	224
806	Heywood-Wakefield Company	37-42
807	Hillyard Chemical Company	153
808	Hobart Mfg. Company	148, 149
809	Holcomb Mfg. Company, Inc., J. I.	209
810	Holophane Company, Inc.	233
811	Hunt Pen Company, C. Howard	31
812	Hunter Douglas Aluminum Division	197
813	Huntington Laboratories, Inc.	161, 162
814	Hussey Manufacturing Company, Inc.	164
815	Insulrock Company	113
816	Inter-Continental Trading Corp.	215

(continued on next page)

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February, 1961

ADVERTISEMENTS

669	670	671	672	673	674	675	676	677	678	679	680
681	682	683	684	685	686	687	688	689	690	691	692
693	694	695	696	697	698	699	700	701	702	703	704
705	706	707	708	709	710	711	712	713	714	715	716
717	718	719	720	721	722	723	724	725	726	727	728
729	730	731	732	733	734	735	736	737	738	739	800
801	802	803	804	805	806	807	808	809	810	811	812
813	814	815	816	817	818	819	820	821	822	823	824
825	826	827	828	829	830	831	832	833	834	835	836
837	838	839	840	841	842	843	844	845	846	847	848
849	850	851	852	853	854	855	856	857	858	859	860
861	862	863	864	865	866	867	868	869	870	871	872
873	874	875	876	877	878	879	880	881	882	883	884
885	886	887	888	889	890	891	892	893	894	895	896
897	898	899	900	901	902	903	904	905	906	907	908
909	910	911	912	913	914	915	916	917	918	919	

WHAT'S NEW

571	572	573	574	575	576	577
578	579	580	581	582	583	584
585	586	587	588	589	590	591
592	593	594	595	596	597	598
599	600	601	602	603	604	605
606	607	608	609	610	611	612
613	614	615	616	617	618	619
620	621	622	623	624	625	626
627	628	629	630	631	632	633
634	635	636	637	638	639	640
641	642	643	644	645	646	647
648	649	650	651	652	653	654
655	656	657	658	659	660	661
662	663	664	665	666	667	668

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INDEX TO ADVERTISEMENTS

(continued from preceding page)

Key		Page
817	Interior Steel Equipment	186
818	Irwin Seating Company	190
819	Jacobsen Manufacturing Company	187
820	Joanna Western Mills Co.	175
821	Kalart Company, Inc.	200
822	Kewaunee Mfg. Company	211
822	Kewaunee Technical Furniture Company	211
823	Keyes Fibre Company	177
824	Keystone View Company	218
825	Kohler Company	201
826	Laboratory Furniture Company, Inc.	127
827	Levolor-Lorentzen, Inc.	139
828	Libbey-Owens-Ford Glass Company	46
829	Linguaphone Institute of America, Inc.	163
830	Locke Steel Chain Co.	152
831	Logan Engineering Company	48
832	Lyon Metal Products, Inc.	236
833	Magnetic Devices, Inc.	180
834	Manley, Inc.	230
835	Maple Flooring Mfrs. Assn.	165
836	Master Lock Company	159
837	Meierjohan-Wengler	224
838	Metwood Manufacturing Company	164
839	Midwest Folding Products Sales Corp.	174
840	Minneapolis-Honeywell Regulator Co.	54, 55
841	Minneapolis-Honeywell Regulator Co.	183
842	Mississippi Glass Company	Cover 3
843	Mitchell Mfg. Company	156
844	Monroe Calculating Machine Company, Inc.	2
845	Moore Company, E. R.	152
846	Moore, Inc., P. O.	236
847	Multi-Clean Products, Inc.	199
848	Natco Corporation	145
849	National Cash Register Company	20
850	National Cornice Works	164
851	National Lock Company	189
852	National Lumber Manufacturers Assn.	178, 179
853	National Sporting Goods Association	146
854	National Super Service Company	212
855	Nesbitt, Inc., John J.	166, 167
856	Neumade Products Corp.	187
857	Newcomb Audio Products Co.	30
858	New York Silicate Book Slate Company, Inc.	15
859	Nissen Trampoline Company	8
860	Norman Products Company	151
681	Norman Products Co.	203
861	Norris Dispensers, Inc.	129
816	Olympia Typewriters	215
862	Peterson & Company, Leonard	238
863	Photo Materials	236
864	Pittsburgh Corning Corporation	154, 155
865	Planetarium Division, Spitz Laboratories, Inc.	134
866	Plastic Products, Inc.	47
867	Polacoat, Inc.	174
868	Powers Regulator Company	28, 29
869	Precision Parts Corporation	121
870	Products Research Company	7
871	Radio Corporation of America	21
872	Radio Corporation of America	22, 23
873	Radio Corporation of America	24, 25
874	Radio Corporation of America	26
875	Radio Corporation of America	27
876	Rauland-Borg Corporation	204
877	Rockwell Mfg. Company	135
878	Royal McBee Corporation	173
879	Royal Metal Mfg. Company	237
880	Sarkes Tarzian, Inc.	146
881	Schemenauer Manufacturing Co.	5
882	Science Electronics Incorporated	17
883	Sheldon Machine Co., Inc.	216
884	Shure Brothers Inc.	168
885	Shwayder Brothers, Inc.	171
886	Sico Manufacturing Company, Inc.	207
887	Singer Sewing Machine Company	36
888	Sloan Valve Company	1
889	Smith System Mfg. Company	214
890	Snyder Tank Corporation	218
891	Society for Visual Education, Inc.	223
892	Southeastern Metals Company	50
893	Spencer Industries	230
894	Spencer Turbine Company	118
895	Standard Electric Time Company	13
896	Standard Sanitation Systems, Inc.	43
897	Stenographic Machines, Inc.	232
898	Structural Slate Co.	205
899	Swartzbaugh Mfg. Company	52
900	Tandberg of America, Inc.	198
901	Telex, Incorporated	182
902	Thompson Ramo Wooldridge Inc.	10, 11
903	Thonet Industries Inc.	216
904	Turner Corporation	174
677	United States Steel Corporation	44, 45
905	Vendo Company	193
906	Viewlex, Inc.	150
907	Virco Manufacturing Corporation	18, 19
908	Vogel-Peterson Company	214
909	Vonnegut Hardware Co., Von Duprin Division	219
910	Wayne Iron Works	226
911	Wear-Ever Aluminum, Inc.	221
912	Weber Costello Company	240
913	Wells Lumber Company, J. W.	200
914	Wenger Music Equipment Co.	210
915	West Chemical Products, Inc.	227
916	White Mop Wringer Company	234
917	Wiley & Sons, Inc., John	226
918	Wilson Corp., H.	200
919	Zep Manufacturing Corporation	186

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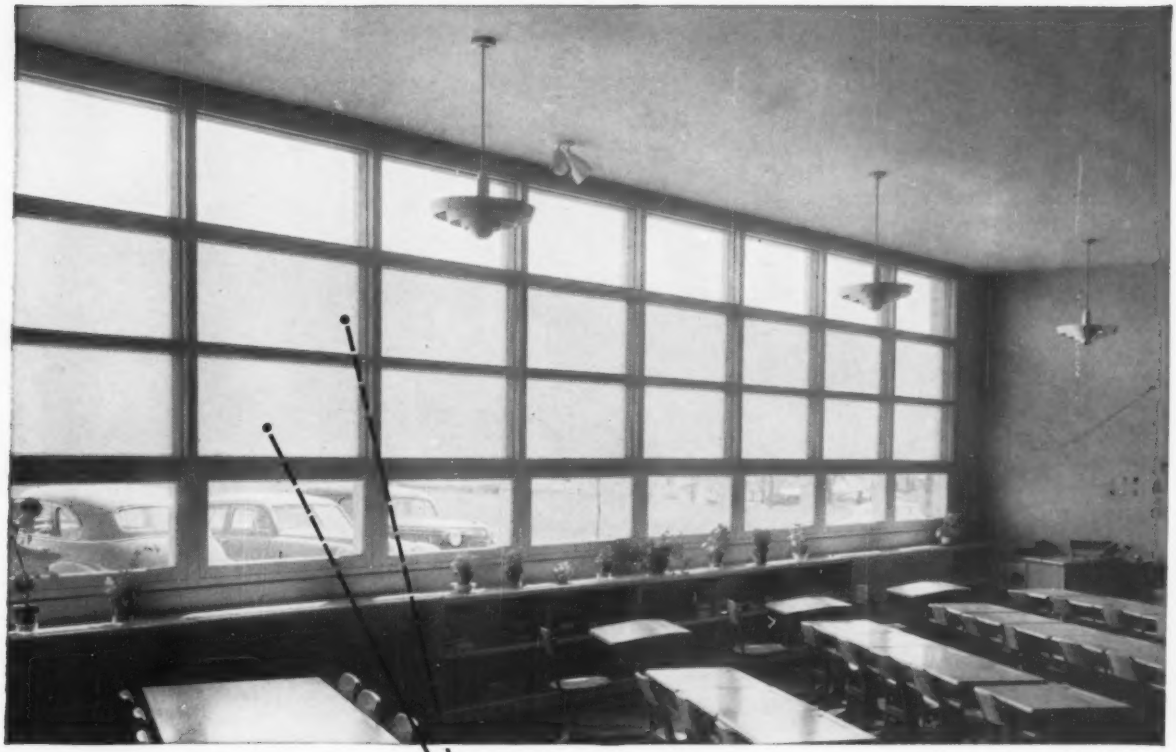

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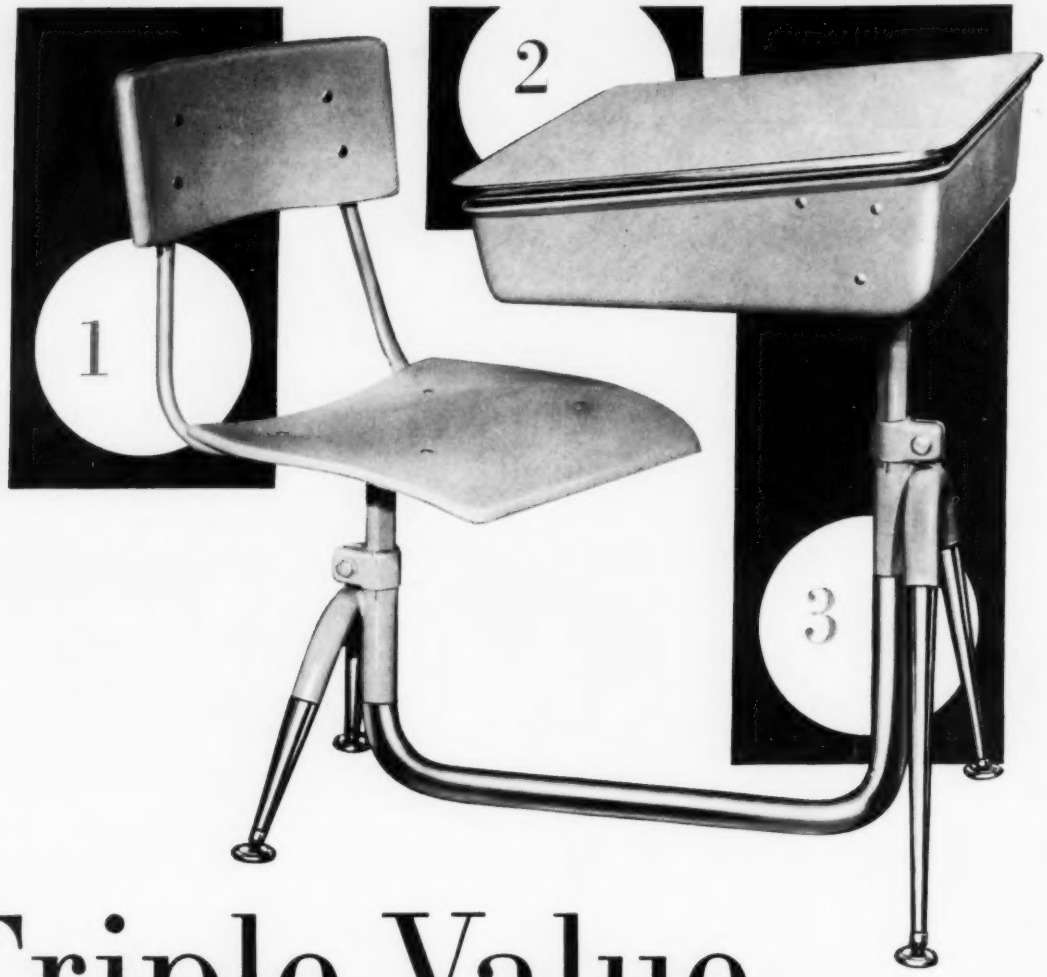

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